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**SOCIAL STRUCTURES, INDUSTRY SYSTEM,
CORPORATE IDENTITIES
AND STRATEGIC CHOICES**

**A Theory of Strategy and an Application to
the Taiwanese Microcomputer Industry**

By

Hung, Shih-Chang

B.B.A., M.B.A.

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**Warwick Business School
University of Warwick**

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Abstract

The thesis develops a sociological theory of strategy that is then applied empirically to nine firms within the Taiwanese PC industry. It aims to show why and how firms within the same industry and country pursue different strategies.

This thesis begins by arguing the relative failure of economics to explain strategic difference because of the socially-embedded nature of economic action. This kind of argument calls for the use of sociology to analyse firm behaviour in order to help reconcile society with agency. Because society embodies a wide range of *social structure*, firms are able to draw upon a plurality of structural rules and resources in order to gain their strategic agency. Informed by this pluralistic account of economic action, the thesis goes on to suggest three sets of structural sources, namely, policy style, business recipe and technology paradigm. The patterning of the three structures constitutes an *industry system* which highlights the significance of social conflicts in structuring firm behaviour. In order to negotiate the conflicts, firms have to choose to conform to certain social structures. Here, choice is possible, because in the industry system there is more than one social structure providing social rules and resources for guiding and empowering firm behaviour.

While recognising the possibility of choice, the thesis continues to argue that this agentive potential of doing otherwise is different for each company. The difference is a product of *corporate identities* which establish firms' structural links with their attendant industry system and so provide them with both access to specific social resources essential to strategic choice, and certain particular rules about how to exercise their choices. Consequently, the concept of corporate identities provides an institutional linkage between structure and agency and it is through this linkage that we examine why firms make different *strategic choices*.

Abbreviation

ASI	Aquarius Systems Inc.
EISA	Extended Industry Standard Architecture
FIC	First International Computer Co., Ltd.
GATT	General Agreement on Tariffs and Trade
HSIP	Hsin-chu Science-based Industrial Park
III	Institute for Information Industry
IPR	Intellectual Property Right
IT	Information Technology
KMT	Kuomintang (Nationalist Party)
LCD	Liquidity Crystal Description
MCA	Micro Channel Architecture
MOEA	Ministry of Economic Affairs
NICs	Newly Industrialising Countries
NSC	National Science Council
OEM	Original Equipment Manufacturing
PC	Personal Computer
ROC	Republic of China
ROE	Return on Equity
SBU _s	Strategic Business Units
TCA	Taipei Computer Association
TSE	Taiwan Stock Exchange

CHAPTER ONE: WHY SOCIOLOGY IN STRATEGIC MANAGEMENT?

1.1 INTRODUCTION

Clevo and Twinhead are two rival Taiwanese notebook PC manufacturers. Both companies are industry leaders in innovation; both are dependent on the overseas market; both were set up in the early 1980s; both are still owned and run by the entrepreneurs who built them; and top managements at both companies are highly dominated by engineering professionals. Though superficially so similar, these two companies pursue different strategies: for example, in the area of product strategy, Clevo is totally concentrated on OEM contracts, and Twinhead is more involved in own-brand marketing; in the area of diversification, Clevo focuses on the notebook PC segment, while Twinhead has diversified into the workstation market; in terms of internationalisation, Clevo has expanded its operations in Malaysia, but Twinhead simply operates its factories in Taiwan. Despite these divergences in strategies, both companies have expanded successfully during the past decade.

This contrast between the strategies of Clevo and Twinhead takes us to the central issue of this thesis: *why do firms pursue different strategies, and how are they able to sustain them?* Certainly, this is a difficult problem for both traditional economics and for recent sociological accounts of organisations, e.g. institutionalism (Powell and DiMaggio, 1991) and the business systems approach (Whitley, 1992a, b). According to neo-classical microeconomic theory, the notions of perfect competition and market equilibrium set the standards for industrial organisation (Nelson, 1991: 64-5; Samuelson and Nordhaus, 1992: 40, 378, 735-6). These two notions together indicate that all firms within the same industry are forced ultimately to be homogeneous and that they earn zero economic profits. The only differences the theory admits are assumed to reflect differences in the markets on which firms depend (Carroll, G.R., 1993: 240; Nelson, 1991: 61). But the market opportunities that Clevo

and Twinhead faced were initially very similar. Market equilibrium and perfect competition do not explain the divergent strategies these two companies have pursued over the last ten years or more.

On the other hand, many organisational theorists have recently attempted to explain the nature of the major organisational patterns current throughout advanced industrial societies, particularly those in the Far East (e.g. Hamilton et al, 1990; Orrù et al, 1991; Whitley, 1992a). Major themes include the institutional school of organisational analysis (e.g. Powell and DiMaggio, 1991; Zucker, 1988) and the business systems approach (Whitley, 1992a, b). Both these underline the cultural embeddedness of organisations, arguing that appreciation of social institutions is critical to explaining firm behaviour. The tendency of both, however, is to insist on institutional pressures towards organisational isomorphism, each country's institutional set defining common characteristic forms of organisation (Whitley, 1992a: 8-9). But again insistence on isomorphism within particular national "business systems" does not help explain the strategies of Twinhead and Clevo. Both are strongly Taiwanese, yet still they diverge.

Arguing against both economic equilibrium and organisational isomorphism, this thesis emphasises that firms' differences are important, and they will respond differently to their immediate economic and social environments. As we shall see later, differences in the social identities of economic agents affect economic outcomes. Since economic outcomes are the result of firms' actions, how firms make decisions is economically significant and a matter of firms' uniqueness. In this thesis, I develop a framework for comparing such uniqueness across firms on the basis of an analysis of the Taiwanese PC industry. In analysing the histories of nine Taiwanese PC firms, I shall argue that firms' unique identities make a difference to their strategic choices. First, however, in this opening chapter I shall demonstrate why the relationship

between firms and society is important, and accordingly provide an overall appreciation of a sociological approach to strategy.

1.2 THE FIRM IN SOCIETY - PROBLEM ANALYSIS

In order for a firm's strategy to exist, the concept of the firm must be meaningful (MacCrimmon, 1993). The study of the firm has been the long time concern of the economics profession (Kay, 1991). The interest in it dates back to the neo-classical theory of the firm (Hodgson, 1988: 196). The firm appears to be a problem for neo-classical economics because of the implied failure of the price mechanism (Coase, 1937). Coase (1937: 388-9) argues that the key feature of the firm is its "internal supersession of the price mechanism" and the allocation of resources by command rather than price. Within economics, Coase was generally credited with recognising the importance of the firm. But why are activities internalised within firms, when they could be organised through market transactions? The integrative analysis of firms' internal activities and market transactions in this sense has been neglected in Coase's argument (Hodgson, 1988: 199-201). The economists who followed Coase then have taken a rather different approach to the benefits of integration and their contributions to strategy are highly influential (Rumelt et al, 1991).

1.2.1 Economic Approaches to Strategy

As Rumelt et al (1991) and Kay (1991) observe, economics represents a major stream of strategic management thinking. Within strategic management, there have, of course, been different schools of economics. But the most important contributor to the development of strategic management is probably oligopoly theory, with its interest in explaining a rational approach to strategy from a classical viewpoint (Clutterbuck and Crainer, 1990: 167-70; Kay, 1991: 60). Two themes from this field are currently

influential: industrial organisation and game theory. Industrial organisation (I.O.) developed from Bain's (1968) concern with how structure (concentration/mobility barriers) determined conduct and in turn determined performance (S-C-P). This model has been developed by Porter (1980, 1985) into a more general model of competitive strategy to assess the profit potential of industries. And, it has been brought closer to the firm level in a strategic groups approach (McGee and Thomas, 1986) or case study (Harrigan, 1980).

Game theory has also been influential in strategy ever since the first time it was applied to business (Von Morgernstern and Neuman, 1944). Game theory has been picked up by Porter (1985) with his discussion of good and bad competitors, and in textbooks such as Oster (1990) and Dixit and Nabeluff (1991). Camerer (1991) claims, despite problems of both over-simplification and over-complexity, game theory has a great potential in strategy research.

The main assumption of the theory of the oligopolistic firm - both I.O. and game theory - is a rational process, designed to maximise long-term advantage. The notion of market equilibrium sets the standard for this theory and provides the foundation for the premise that firms pursue monopolistic market power in order to maximise their profits. Despite its widespread influence on strategic management thinking, many of its premises have come under dispute recently. For example, it is alleged that the general equilibrium analysis of both I.O. and game theory sheds little light on decision-making processes in a real world firm (Jacobson, 1992: 783; Kay, 1991: 58-9; Nelson, 1991: 64). The tendency to ignore a firm's decision-making in part reflects that the theory is not interested in behaviour at the level of firms, but rather in broader aggregates - industry or competing groups of firms (Kay, 1991: 58; Nelson, 1991: 62). In addition, this theory offers an under-socialised view of firms because of an inadequate theory of static, non-competitive view of business environments (cf. Jacobson, 1992). Its conceptions are under-socialised in that they do not allow for the

extent to which pre-existing social structures are essential to the constitutions of human action (Wrong, 1961: 188). Thus, the theory of the oligopolistic firm fails to explain heterogeneous firms whose agentive potential derives from the complex structures of society (Whittington, 1989: 87-91). As I shall argue in the following chapters, this failure is rooted in a neglect of agency which concerns episodes in which human actors could have acted differently (Giddens, 1984: 9).

Another stream of strategic thinking, transaction cost economics, can be added to the above economic approaches treating the firm as a rational economic actor. Perhaps no one has done more to develop this area than Oliver Williamson (1985, 1988) who proposes an evolutionary or Darwinian approach to strategy. In general, this stream of strategy emphasises unbeatable market forces that allow only efficient competitors to survive (Whittington, 1993: 17-22). For Williamson (1991: 74), "economy is the best strategy" because any differentiation in "strategizing" is redundant in a system in which the environment is too efficient to tolerate the different. Although not neo-classical, the evolutionary approach is likewise indifferent to individual firms and, as a result, downplays the role of agency in organisational adaptation to business environments. Overall, as we have seen, both the theories of the oligopolistic firm and transaction cost economics fail quite to establish an adequate account of firms and strategic differences.

Up until recently, national sources of difference have been particularly neglected. Increasingly, however, economic theorists recognise that previous universal generalisations have been inadequate and that national specificities matter to business competition. For example, picking up again his discussion of competitive advantage, Porter (1990) extends the organisational power base from industry structure to home nation boundary. Kay (1993), too, argues that good strategy depends on the skilful manipulation of national architecture. Both of them urge us to emphasise the national differences that must be handled if success is to be sustained. Drawing wide

disciplinary support, they view the organisation as dependent upon resources from its immediate environment in order to survive. Strategy based on national resources has intuitive appeal, and national differences on resources have certainly played a key role in determining patterns of competitiveness in many industries. Yet these economic strategists have focused just on resource differences, not national differences in norms and utility functions. Within the economic notion of markets' natural processes, these strategists see only the rule of efficiency or profit-maximisation governing action, and thus neglect the alternative rules available. Indeed, each of these rules is associated with different outcomes yet each is compatible with the pursuit of resource. As I shall argue in the following chapters, plural social structures possess a variety of social rules and resources by which firms may act.

On the other hand, while emphasising uniqueness, the new resource-based theory of the firm directs attention inside the firm (Grant, 1991; Mahoney and Pandian, 1992; Penrose, 1980; Wernerfelt, 1984). It stresses the influence of unused organisational resources, especially the skills, capability and intangible assets of firm managements, which are unique to each firm. In a general sense, the resource-based approach is a theory of factor monopolies, at one level down from market monopolies of I.O. theory. Unlike I.O. theory, however, the resource approach emphasises a great deal the significance of firm differences. But recognition of firm differences on resource availability still fails to reconcile social structural complexity with agency. Not only does this theory not recognise distinctive social rules, but also it does not explain where resources come from. As I shall argue in the following chapters, social structures provide firms with both rules and resources that together are essential for the possibility of agency.

1.2.2 Sociological Rationales of Strategy

Seeking a repudiation of economic approaches to strategic difference, this thesis argues that firms may be agents who could respond differently to their environments. Viewing firms as agents, they may have control: internally they enjoy the capacity for constructing strategic objectives for themselves; externally they hold the power to mobilise social rules and resources in order to achieve these objectives. Towards the end of this thesis, I define firms as semi-autonomous social actors who manage plural sets of rules and resources in a variety of ways, thus reaching various economic and social outcomes (cf. Granovetter, 1985, 1992; Morgan, 1990; Reed, 1989; Whitley, 1987; Whittington, 1989). This approach calls for the use of sociology to analyse firm behaviour, in a form that goes "beyond traditional business elite and intercorporate network studies to account for variations and changes in the actions of firms as economic agents, and their consequences" (Whitley, 1987: 142).

Against the economic approach ignoring complexity in the business environment, the central argument of a sociological approach to strategy is to recognise that the "embeddedness" of economic action is an on-going network of social relations, not some abstract set of market forces (Granovetter, 1985, 1992). These networks, involving perhaps the state, families, professions, religion and ethnicity (Whittington, 1992: 705), influence both the ends and means of strategy, defining what is appropriate and reasonable behaviour and furnishing particular resources. Furthermore, in considering the significance of firms as economic agents, their activities are coordinated with those of other social groups (Waarden, 1992: 33). Thus competing firms are not immune to the external influences of their immediate social context. This kind of argument highlights the importance of social institutions in structuring firms' behaviour (cf. Whitley, 1987; 1992a: 2-9).

This stress on firm-society relations has so far led institutionalist sociologists to insist on isomorphism, determinism and conformity to the norms of dominant social institutions (Powell and DiMaggio, 1991; Zucker, 1988; Zukin and DiMaggio, 1990), particularly professional bodies and the state (DiMaggio and Powell, 1983; Scott, 1987). This approach depicts organisations as impelled by normative pressures deriving from the environment. For example, organisations are viewed as following the dominant pattern valued by the industry at large (cf. Dyson, 1983; Romme, 1990; Spender, 1989; Whipp and Clark, 1986). Much of this argument can be traced to Parson's (1960) functionalism in which Parson asserts that social legitimacy is an equally compelling consideration to the primary objective of an organisation's function. In Parson's notion, organisations are legitimate to the extent that their goals, purposes, and methods mesh with those of society: "an organisation...is a part of wider social system which is the source of the 'meaning', legitimation, or higher-level support which makes the implementation of the organisation's goals possible" (1960: 63-4). In other words, the emergence of particular strategy tends to reflect the demands and expectations of the institutional environment that offers legitimacy. Thus Brunsson (1990) has declared, legitimacy is an equally important output of an organisation as its product (cf. Habermas, 1973; Champagne, 1992: 120; Scott, 1991: 169-72; Singh et al, 1986).

What is legitimate clearly depends on the immediate social context (Oliver, 1991: 149) - hence a concern with dominant professional groups or national differences. Three examples can illustrate this concern. First, the split between ownership and control in advanced societies makes a difference, with Gedajlovic (1993: 733) suggesting that managers may pursue growth (Marris, 1964; Nichols, 1969), perquisites (Jensen and Meckling, 1976), personal power (Simon, 1945) and risk reduction (Amihud and Lev, 1981) instead of maximising shareholder profit. Therefore, within an organisation, the interests of dominant groups are important in explaining firm behaviour. Secondly, it is alleged that the dominance of the accounting

profession in Anglo-Saxon societies has left businesses typically over-reliant on financial techniques in their strategic planning and multi-divisional structures in their strategic controls (Armstrong, 1987; Espeland and Hirsch, 1990; Fligstein, 1990). Accordingly, within a society, the dominant professional body likewise plays a key role in structuring firm behaviour.

Thirdly, and more broadly, studies of the Far East have revealed very considerable differences in the typical strategies and organisational structures of firms in different countries - from the *Keiretsu* of Japan, the *Chaebol* of Korea to the family businesses of Hong Kong and Taiwan (Clegg and Redding, 1990; Hamilton and Biggart, 1989; Whitley, 1992a). Particularly important in the Far East have been entrepreneurial states in governing strategy (Amsden, 1989; Johnson, 1982; Wade, 1990). Here in Taiwan's case, the combination of an exclusionary Kuomintang state with the peculiar culture of Chinese family business has created a mercantile economy of small and medium-sized firms, loosely linked by familial networks (Whitley, 1992a; Wade, 1990; Wong, 1985). This broad emphasis on the particular social context has led to significant insights regarding the importance of institutional environments that allow for the explanation of certain organisational structures and processes in market economies, such as those in Taiwanese society. Overall, the institutionalists' concern for legitimacy has so far led them to emphasise the significance of institutional norms or social rules - such as strong state and family business - in helping explain firm behaviour.

Partly informed by the institutional school of organisational analysis, Whitley (1992a, b, e) suggests that the socially constructed nature of national business systems or recipes has important implications for the analysis of business organisations. These recipes embody particular arrangements of hierarchy-market relations that become established in different contexts; "they reflect successful patterns of business behaviour and understandings of how to manage economic activities that are reproduced and

reinforced by crucial institutions" (Whitley, 1992a: 7-8). This macro-level framework, assuming generalised recipes throughout the country, can be seen as a combination of various logics (cf. Spender, 1989). In this way, however, Whitley's business systems approach "plays down all the sources of diversity within a country other than the general national institutions" (Räsänen and Whipp, 1992: 52). This point suggests that the study of business systems should focus more on a sector perspective which goes beyond the positions of cultural relativism (Räsänen and Whipp, 1992).

For example, Spender (1989) introduces the notion of industry recipes into accounts of firms by stressing how the knowledge-base of an industry is interrelated so as to constitute specific rationalities of management. He asserts that "competitive advantage generally lies in this knowledge-base rather than in a tangible resource, no matter how idiosyncratic" (Spender, 1989: 1-2; cf. Grant, 1991; Wernerfelt, 1984). Dosi (1982, 1984) proposes the notion of technology paradigm that defines the dominant pattern of organisational activities set by the most successful firms in their particular areas (cf. Jones and Womack, 1986; Nelson and Winter, 1977, 1982; Sahal, 1985; Whipp and Clark, 1986). In order to demonstrate their modernity, firms have a tendency to follow the paradigm. Apart from the influence of industrial technology paradigm, firms are also likely to conform to state policy in order to seek state subsidies and contracts. Thus, alleging that the allocation of state resources may be restricted to a limited number of privileged actors, political corporatists emphasise the importance of policy style or networks in structuring firm behaviour (Richardson et al, 1982; Kenis, 1992; Schubert and Jordan, 1992; also see Cawson, 1986; Williamson, 1989). Consequently, a key task in strategy is to understand how different kinds of business rationalities develop and become established in different societies. As we shall see in Chapter 3, I suggest that policy style, business recipe and technology paradigm are central to the variety of social structures which firms have to deal with and manage.

In particular, variations in the nature of overlapping structures may result in systemic tensions or conflicts and so affect the relationships between firm and society. In other words, a society may exhibit a variety of established business rationalities that may conflict with one another. The role of the nation state in structuring firm behaviour, for example, may conflict with some features of the business recipe, as the development of political institutions is continual and dynamic, and so is the interaction between the state and well-established patterns of business recipe. Equally, the role of the dominant technology paradigm may conflict with some features of the local recipe, as the paradigm is oriented towards an international context. In this view, the diversity of social structures is likely to lead to the rise of systemic conflicts that impinge upon the activities of economic actors who operate within the same industry. This in turn raises the general question of what firms do in order to negotiate the conflicts. As I shall argue in this thesis, how to negotiate the conflicts depends on the identities of firms whose power bases derive from their attendant social context, including policy style, business recipe and technology paradigm.

Another important point concerning structural diversity is that firms within the same industry and country have access to a variety of social resources that make strategic choice possible and sustainable (Whittington, 1989, 1992). The acquisition of these social resources is the result of firms' conformity to social rules. Thus Goodstein (1994) and Oliver (1991) have recently declared, firms do not blindly conform to institutional forces, and this conformity is not necessarily a wholly deterministic position. Carroll et al (1990) observe that firms in strong institutional environments, such as Hungary, can also behave proactively in order to overcome institutional obstacles and that this behaviour can create a social structure of its own. Consequently, a "strategizing" effort (Williamson, 1991) can be effective, because institutional environments are not an "iron cage" (DiMaggio and Powell, 1983), but are produced and reproduced through human action (Giddens, 1984). It follows that economic agents "may be expected to exercise 'strategic choice' (Child, 1972) in

relating to their institutional environments and responding to institutional pressures" (Scott, 1991: 170).

This claim for strategic choice affords firms the opportunity of "doing otherwise". Accordingly, as well as permitting genuine choice, a sociological approach to strategy allows the possibility of strategic difference. This emphasis on difference accounts for strategy with reference to social relationships that are inherently unique to each firm (cf. Hellgren and Melin, 1993). Certainly, the firm's uniqueness is an essential aspect of strategic analysis. This uniqueness contributes to the foundations of corporate identities. The identities, while "providing an institutional link between structure and agency" (Cohen, 1989: 207), not only afford firm access to plural social resources empowering their actions, but also connect them with a plurality of social rules that govern or constrain their actions. In other words, the identities associate firms with certain social forces that will cause them to make strategic choices differently (cf. Mattsson, 1988: 247).

I shall base my argument for strategy upon the structurationist sociology developed by Anthony Giddens (Cohen, 1989; Craib, 1992; Giddens, 1979, 1984). Over the last decade, his structuration approach has gained considerable influence within management studies. The distinctive quality of this structurationist perspective is its grounding of human action in the society while acknowledging social structure and without dissolving into pure individualistic voluntarism (Giddens, 1984; Knights and Morgan, 1991; Pettigrew, 1985; Whittington, 1992). Thus, this combination of action and structure offers a possible framework for analysing strategic difference or agency through the socially constructed nature of economic action. As I shall argue in chapters 2 and 3, social structures concern the ways in which social actors behave and develop relationships with one another. These ways constitute institutionalised patterns which can be broken down into social rules and resources. The structurationist account of strategy refers to the rule-following and resource-empowered nature of agency.

Following rules in their action, firms are legitimate and then have access to resources for competing. However, the extent to which, and ways in which, firms are effectively legitimate depends on the exploitation of firms' distinctive identities in their immediate social context.

To conclude, this thesis contains two parts - first it proposes a theory and then it applies this theory empirically to the Taiwanese PC industry from which nine case study firms are drawn. Generally, the thesis concerns one major issue. That is, arguing against both economic approaches to strategy and organisational isomorphism, it will try to explain why firms within the same industry and country pursue different strategies. In particular, the thesis will demonstrate that firms have access to a range of alternative strategies, each associated with different processes and outcomes and yet each capable of achieving systemic legitimacy.

1.3 ORGANISATION OF THE THESIS

Figure 1.1 is used to summarise briefly the whole content of the thesis, and will be subsequently elaborated throughout the thesis. Just as this figure shows, the thesis deals with four conceptual categories - social structures, industry system, corporate identities and strategic choices. The four concepts will be integrated in a complex framework in order to understand the socially structured nature of strategies which is specific to every individual firm.

In so doing, the thesis will be organised into three parts. Part one covers chapters 1 to 4. In this opening chapter, I have introduced the importance of a sociological approach to strategy while acknowledging the socially-embedded nature of economic action. *Chapter 2* will contain a more detailed review of the literature. I shall argue that Giddens' structuration theory is significant in overcoming the

Thesis title: Social Structures, Industry System, Corporate Identities and Strategic Choices

*Questions: Why do firms pursue different strategies?
and how are they able to sustain them?*

Main issues for each chapter:

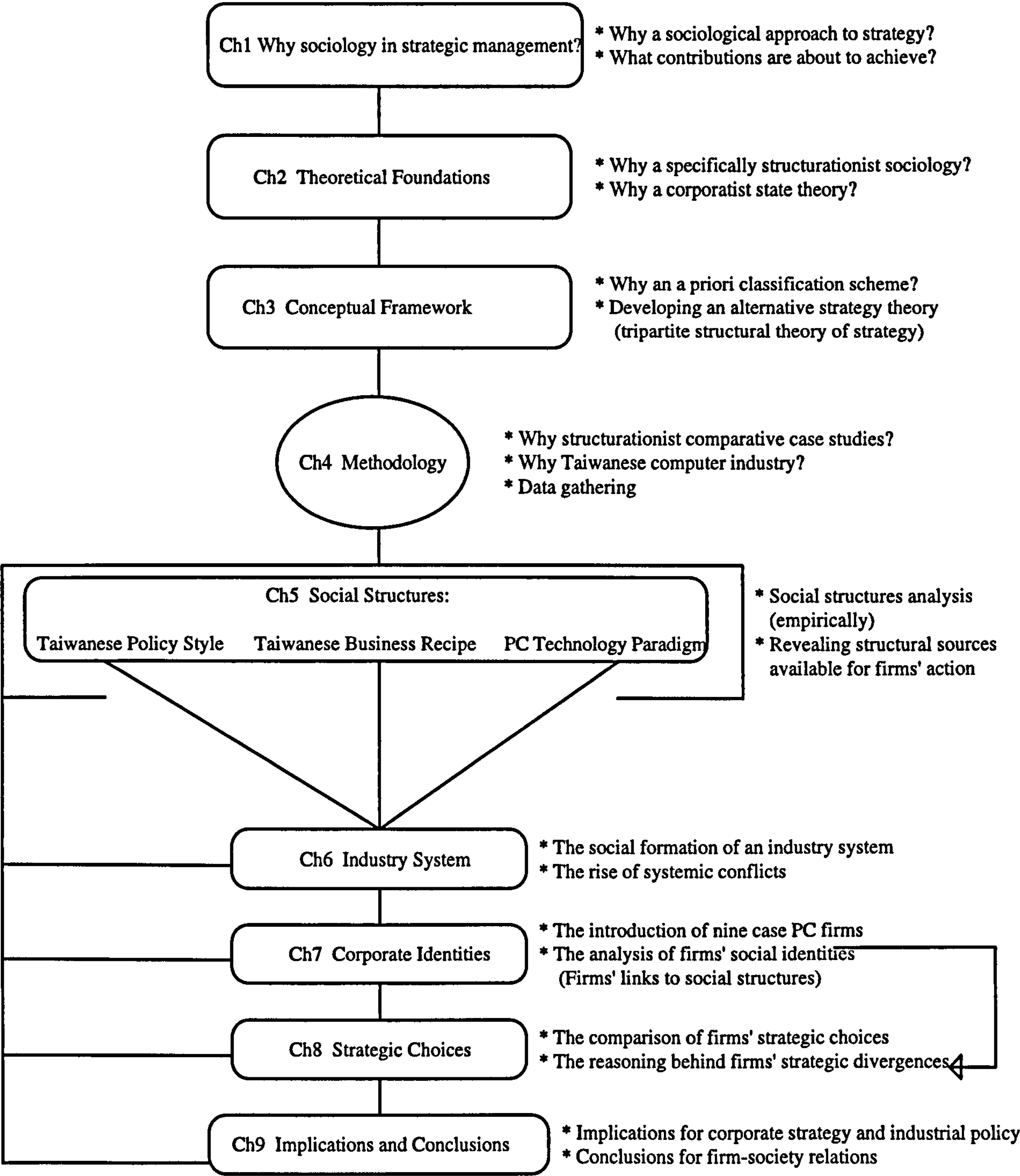


Figure 1.1 Organisation of the thesis

limitations upon theorising organisation, by virtue of transcending dualistic foundations of subjectivist and objectivist paradigms. This investigation of structuration theory provides an apt introduction to the recent accounts of strategy theory of organisational sociology and corporatist theory of political sociology. I shall argue that these accounts should be integrated in a framework for researching the relationship between Taiwanese PC firms and their attendant social context. *Chapter 3* will, therefore, develop an alternative structurationist approach to strategic management, one which grounds the potential agency of firms on the complexity of the society in which they operate. In particular, a tripartite scheme of social structures - policy style, business recipe and technology paradigm - will be elaborated providing a variety of social rules and resources by which firms can choose to act. Lastly in this part, *Chapter 4* will examine the basic methodology and describe the method of approaching the empirical material in detail.

Part two contains the main body of the thesis, which consists of the data and the empirical analyses. *Chapters 5* will examine the three social structures - Taiwanese policy style, Taiwanese business recipe and PC technology paradigm - particularly relevant to the evolving Taiwanese PC industry of 1980-1993. *Chapter 6* will examine the patterning of the three structures which constitutes the system of the Taiwanese PC industry within which my case firms cooperate and compete. *Chapter 7* will go on to introduce the social identities of nine PC companies that will make up my PC case studies. *Chapters 8* will proceed in a thematic way - around various strategic discriminators - both to examine how the social identities of the nine case study firms all made a difference to their strategic choices and elucidate the identities or forces behind them. In particular, I shall explain, for most of these companies, how their various strategic choices relate to my three structural "axes", and how the relevant corporate identities of my case studies help explain these choices.

Finally, part three contains the synthesis and conclusion. *Chapter 9* will begin by considering the case studies' implications for the practice of strategic management and for government industrial policy. Last of all, I shall discuss the generality of my tripartite structural theory of strategy, and examine this theory's implication for our understanding of how firms operate in our societies in general.

CHAPTER TWO: THEORETICAL FOUNDATIONS OF SOCIOLOGICAL STRATEGY RESEARCH

2.1 INTRODUCTION

In the last chapter, I introduced the importance of a sociological approach to strategic management. In this chapter, I shall examine more explicitly the theoretical foundations of sociological strategy analysis that inform our thinking for developing a framework to study Taiwanese firm strategy. Much of the work in this chapter originates from reflection on "the philosophy of social science". The philosophy of social science concerns itself with two issues: the nature of the world and the nature of the explanation. The former can be classified under the headings of ontological questions, whilst the latter pertains to epistemological questions. The dualism of ontology and epistemology connects us to the realisation of the real world in a straightforward manner: *different forms of existence require different theories of knowledge for explanation.*

Accordingly, I begin assembling the particular theories that I found important for researching the relationship between Taiwanese PC firms and their immediate social context. In the next section, I will begin by arguing my approach to the construction of a strategy theory. Once my approach to theory is decided, I will move on to review the paradigmatic diversity of organisation research, focusing in particular on the various ways in which the organisation has been conceptualised as the basis for organisational analyses. While arguing that traditional organisational analyses insist too much either on the subjectivity of human action or on the objectivity of social structure, I shall note that the structurationist sociology of Anthony Giddens has developed a radically different approach in which dualistic formulations of the relationship between action and structure are superseded. Furthermore, in seeking to develop a theory designed to explain Taiwanese PC firms' strategies, I shall argue that

structurationist sociology alone is unlikely to link together the substantive components of a firm-in-society model, therefore calling for the use of political corporatist theory in the research. On the whole, my purpose in this chapter is to explore theories critical to the evolving Taiwanese context since 1980 when the Taiwanese PC industry has emerged. This sets the scene for Chapter 3 in which I develop a tripartite structural theory of strategy for researching strategic differences across my case study firms.

2.2 APPROACHES TO STRATEGY THEORY

One of the important missions of organisational scholars' work is to conduct research that contributes to theoretical progress on the one hand, and to apply that theoretical achievement to the practice of management as a profession on the other (Montgomery, et al, 1989: 191). To do this well, we need to elaborate our research in order to provide an intimate understanding of the practical problems concerning with modern capitalist enterprises. Also, we need to strengthen our skills to advance academic knowledge that is relevant to both the discipline and the profession. The construction and mastery of a strategy theory is therefore itself a hermeneutic task, a form of practical activity that must take its place alongside other forms of activity. But at the same time it also has to be related to its own backgrounds and frameworks which are already established and employed in the social world (Trigg, 1985: 195-6). Having said this, I suggest that an innovative variant of strategy theory is best promoted under conditions of accommodation and communication through existing social theories (cf. Popper, 1959; Poole and Van De Ven, 1989).

This suggestion is consistent with Merton's (1968) emphasis on a functionalist paradigm of inquiry. Following Merton, conventional philosophies of science argue that advances in science are facilitated by researchers building and refining each other's work over a period of time (cf. Montgomery et al, 1989; Wieviorka, 1992: 169;

Weick, 1989). Viewing science as such an evolutionary and cumulative process engenders norms of co-operation among researchers. Theories with their emphasis on gradual development through periodic consolidation, are highly consistent with the paradigm in which "the constructs are related to each other" (Bacharach, 1989: 498).

The identification of this evolutionary nature of scientific knowledge calls for the use of *middle-range analysis* in organisation theory (e.g. Ginsberg and Venkatraman, 1985; Jemison, 1981; Pinder and Moore, 1980; Weick, 1989). Originating from Merton's (1968) study, the use of middle-range theorising is to reduce the scope or coverage of a set of interrelated propositions (a theory) to a level that can be empirically evaluated. In particular, the basic idea is to narrow the theoretical domain of the propositions to a point where they can be supported on empirical grounds (Pinder and Moore, 1980). Weick (1989: 516) calls this a building process portrayed "as imagination disciplined by evolutionary processes analogous to artificial selection". Bearing this process in mind, my approach to the construction of an alternative middle-range theory of strategy is *logical*, *cumulative* to the existing organisational theories of knowledge and also *specific* to my empirical research. What is logical, cumulative and specific then depends clearly on the exploration of paradigms in organisation/strategy analysis followed by the task of choosing theories required to make sense of my case studies. With this reasoning, first of all I will move into a paradigmatic exploration for organisational analyses in the next section.

2.3 PARADIGMS OF ORGANISATION ANALYSIS

Strategy research constitutes one sub-discipline of organisation analysis. In noting this, the construction of strategy theory should be inherently determined by its relation to a paradigmatic understanding of organisational analysis. In recent years the development of organisation theory has been full of reflection on its paradigmatic

status and many rival modes of analysis (e.g. Aldrich, 1988; Ansoff, 1987; Ashmos and Huber, 1987; Donaldson, 1985, 1988; Gioia and Pitre, 1990; Hassard and Pym, 1990; Reed and Hughes, 1992). We have seen numerous works analysing the study of organisation by reference to alternatives to the traditional orthodox paradigms. This identification of paradigm debates highlights the importance of understanding the meta-theoretical assumptions underpinning empirical studies. These efforts can be traced to Thomas Kuhn's history of science. In his renowned book *The Structure of Scientific Revolutions*, Kuhn (1970) uses the term "paradigm" to indicate a dominant single conceptualisation that incorporates theory, method and standards in a research area.

Since Kuhn's work, much research has been done on the development of a paradigmatic understanding of organisation in advanced societies. Perhaps the most important one was developed by Burrell and Morgan (1979). In their book, Burrell and Morgan argue that social theory can usefully be conceived of in terms of four broad paradigms, differentiated by their espousal of contrasting philosophies of science and theories of society. As Willmott (1990: 49) observes, its appearance has heightened awareness of the theoretical foundations of organisation research; it has also identified "the existence of vast expanses of intellectual terrain" that have been ignored by organisation research.

In Burrell and Morgan's (1979) scheme, assumptions about social science are arrayed in two dimensions, which may be ascribed to a subjective-objective distinction. Specifically, a subjective approach to social science encompasses a nominalist ontology, anti-positivist epistemology, a voluntarist approach to human nature, and ideographic methodology. In contrast, an objectivist approach to social science encompasses a realist ontology, positivist epistemology, determinist approach to human nature, and nomothetic methodology. Assumptions about society and derivative sociologies are arrayed in a second dimension. A sociology of regulation represents

one end of the dimension and is based on assumptions of a society in which order, integration, consensus, and stability are the natural state. A sociology of radical change represents the other end of this dimension; it rests on premises of societal conflict, disintegration, and coercion. Taken together, the two dimensions result in four paradigms. The radical humanist and radical structuralist paradigms reflect assumptions of a society in conflict and a subjective and objective social science, respectively. The functionalist and integrative paradigms reflect assumptions of an orderly society and subjective and objective social science.

However, the core argument of the framework falls in an "either/or" cast, with points between poles all but ignored. Theories and their categorical forms are represented as subscribing to either a subjectivist or an objectivist view. In the field of organisational studies, for example, research has been split into two directions that emphasise either a voluntaristic or deterministic view - the former affirming, the latter denying strategic choice (Whittington, 1988: 521). As mentioned earlier, the deterministic perspective stresses the importance of the objectivist approach to human nature and the voluntaristic view refers more to the subjective experience of individuals. As Berger and Luckmann (1967: 149) argue: "Since society exists in both objective and subjective reality, any adequate theoretical understanding of it must comprehend both these aspects". The paradigms of Burrell and Morgan's scheme in this sense ignore the very possibility of analysis which is much more sensitive to the mutually reinforcing nature of action (subjectivity) and structure (objectivity) (Willmott, 1990).

Rather than start with a separate definition of subjective and objective reality, a number of attempts to transcend dualistic foundations of subjective and objective paradigms can be found in the sociological literature. Basically, sociology is a sort of general discipline dealing with social actors' relations in modern society. It could be said, however, that the incorporation of sociology within management has centred on

the relative weight to be given to the deterministic contingency and population ecology (cf. Bryman, 1993). Recently however, this stress on a sociological approach to strategy is becoming much more elaborate and prevalent, with its challenges ranging from interpretive understanding (e.g. Knights and Morgan, 1990, 1991; Morgan, 1990; Whittington, 1993), and ideological critiques (e.g. Shrivastava, 1986) to the general applicability of theories (e.g. Boyacigiller and Adler, 1991; Whitley, 1992a, b).

In particular, over the past decades, various sociological approaches to management have arisen from the desire to explicate ontological, epistemological and methodological assumptions underlying different forms of organisational analysis. Here, Giddens' structuration sociology is elaborated in the following section not only because of its rigorous standpoint in illuminating the above arguments (cf. Cohen, 1989: 209; Willmott, 1990), but also because of its usefulness in providing this research with an adequate account of human agency. Note my ultimate objective in this thesis is to deny *isomorphism* and assert *strategic difference and agency*. My concern is mainly about the relationship between firm behaviour and social structures in the Taiwanese PC industry. In this way, structuration theory has gained considerable influence within management studies, informing accounts of both strategic agency and social structures¹. However, as Whittington (1992: 707) has recently argued, "the advocates of (strategic) agency have relied on Giddens' notion of structuration", yet neglected his commitment to the complexity of social structures. In the next section, I shall therefore link this structuration sociology with the analysis of strategic agency.

¹For example, Barley (1986); Bouchikhi (1993); DiMaggio and Powell (1983); Hamilton and Kao (1990); Hodgson (1988); Knights and Morgan (1991); Pettigrew (1985); Ranson et al (1980); Smith (1983); Whittington (1992); Willmott (1990), among others.

2.4 FROM STRUCTURATION TO SOCIOLOGICAL STRATEGY THEORISING

The theory of structuration was worked out as an attempt to transcend, without discarding altogether, three prominent traditions of thought in social theory and philosophy: hermeneutics or "interpretative sociologies", functionalism and structuralism. Each of these traditions, in my view, incorporates distinctive and valuable contributions to social analysis - while each has tended to suffer from a number of defined limitations.

(Giddens, 1981: 26)

Giddens' work is remarkable, not only for its quantity, but also for the range of ideas it brings together. For example, in developing a grand theory to integrate the dualism between "subjectivity" and "objectivity", Giddens (1976, 1979, 1984) has stressed the role of agency in the reproduction of social institutions. In addition, it is exceptional too, in that Giddens' writings on structuration theory have been in the forefront of developments in social theory for the past two decades.

2.4.1 From Duality of Structure to Sociological Strategy

An important concept that helps us understand structuration sociology is that of the linkage between action and structure. Structure and action are the two main determinants of social outcomes that are generally recognised in sociology, but whose relative importance is much debated as a central issue in sociological theory. According to Jary and Jary (1991), in the writing of traditional social scientists, this problem is allegedly resolved in one way or another. Such resolutions of structure-action relation generally amount to the emphasis of one term at the expense of the other: either social structure is taken as the principal object of analysis and the agent is effectively eclipsed, as in "structuralism, some forms of functionalism and althusserian Marxism"; or the reverse is emphasised, stressing "instead the capacity of individual agents to construct and reconstruct their worlds and the necessity of explanations in

the actors' terms", as in "methodological individualism, social phenomenology and ethnomethodology" (Jary and Jary, 1991: 636; cf. Craib, 1992: 13-32).

In place of this argument, Giddens proposes a shift from a static to a dynamic perspective, namely, from the theory of structure to the theory of *structuration*. He notes that society is produced and reproduced through human action, and he rejects any form of structural explanation and any notion that a society might have an existence over and above individuals. This covers any explanation which grants a society emergent properties, or talks about determining human action. This in turn leads to a wholesale rejection of functionalist (e.g. Parsons) and evolutionary (e.g. Marxism) explanations.

By making a virtue of formulating a coherent account of both human agency and social structure, structuration theory thus provides an elucidation of the constitution of society with which the social sciences at large are concerned. Throughout Giddens' work, this elucidation is mainly built around the concept of duality of structure. The duality of structure means that it is not possible to talk of action without at the same time referring to structure and vice versa. As Giddens argues, sociology usually sees structure as a constraining or determining feature of social life, but in fact it is also enabling (Table 2.1). Structures are "enveloped" in actions, which produce, reproduce and change them. He defines structures in terms of "rules" guiding action, and "resources" empowering action. Analogous with this concept of duality of structure, as far as strategy research is concerned, is that strategic action should be seen as channelled through the complex structures of society (Whittington, 1989, 1992, 1993: cf. Pettigrew, 1985; Whitley, 1987; Granovetter, 1992). Largely informed by Giddens' structuration theory, Whittington (1993: 28-39) explicitly points to the "relativistic" nature of firm behaviour, enabled and constrained by the social construction of structural properties.

Table 2.1 Structure and Agency in the Structuration Theory of Anthony Giddens

	Structuralist or Voluntarist Theories	Giddens' Structurationist Alternative
Characterisation of Structure	Structure or Agency	Duality of Structuration; the Interrelation of action and structure
Characterisation of Actor	Agents as supports of structure or as purely voluntaristic	Knowledgeability of actors/conscious intentionality - but in context of structure as medium and outcome of agency and interaction

Source: Partly adapted from Jary (1991: 120)

This relativistic approach emphasises that firm behaviour is socially situated and constructed with both the ends and means of strategy channelled through a multiplicity of existing structural rules and resources. In more detail, structures are the institutionalised rules and resources firms use in interaction and they are analysed as dualities: they are both the medium and the outcome of interaction. They are the medium because structures provide rules and resources firms must draw on to interact meaningfully. They are the outcome because rules and resources exist only through being applied in interaction. As Giddens (1979: 71) explains: "According to the notion of the duality of structure, rules and resources are drawn upon by actors in the production of interaction, but are thereby also reconstituted through such interaction".

Implicit in Giddens' formulation, but more explicit in Whittington's thesis, are the rule-following and resource-empowered nature of agency. Thus, it would seem clear here that the emphasis of a sociological approach to strategy demands that we also conduct our analysis in terms of rules and resources with which firms have to deal in their immediate social context. Rules and resources are bound up with issues of structural sources and their deployment becomes the basis of strategic power. In terms

of synthesis, the resources are normally deployed by agents according to the rules society provides for the guidance of action. Such action Giddens refers to as "social practice" and it is by taking social practices as objects of study that sociology can overcome the traditional dualism of action and structure.

From here, Giddens continues to indicate that these practices can be looked at from two sides, concentrating on one and bracketing the other: we can engage in "strategic conduct analysis", looking at what actors do, how they reflexively constitute their activity, the implicit rules they follow; or we can engage in "institutional analysis", the analysis of social systems. Social systems, existing in time-space boundary, are constituted by social practices. In more detail, the concept of social system refers to "a relationship in which changes in one or more component parts initiate changes in other component parts, and these changes, in turn produce changes in the parts in which the original changes occurred" (Giddens, 1979: 73). Here, the movement from talking about social practices and structures to social systems is important for Giddens' attempt to go beyond the scope of a purely voluntarist theory of action. For Giddens, structures are chronically reproduced rules and resources. In turn, social systems are defined by different clustering or patterning of structures. Thus, when applied to sociological strategy analysis, the structurationist sense of agency can be approached by recognising the patterning of social rules and resources by which firms' actions are governed and inspired.

2.4.2 Rethinking Rules and Resources

The discussion above notes that, without rules and resources there can be no strategies. But what are these rules and resources, explicitly? As we can see in Giddens' work, rules and resources are separate notions, both related to various aspects of power formation. But at the same time, Giddens also mentioned that we can not conceive of rules without reference to resources (Giddens, 1984: 18). In general,

social rules are thought of in connection with games, as formalised conventions or logics. They are understood procedures or interpretations of human actions as well as interactions (Giddens, 1984: 19-25; 1989: 19). The procedures or interpretations can be conceived of stocks of knowledge, enabling social actors to understand how to proceed in a meaningful way. In the case of economic action specifically, they are particular ways of directing and organising firms that become established as dominant patterns of economic rationalities in different societies. This indicates the rule-following component of firm behaviour.

On the other hand, firm behaviour is not simple rule-following: the application of a social rule involves competition for different access to resources and it is the resources that make behaviour or action possible and sustainable. As Scott (1991: 169) asserts, by obeying rules, firms are legitimate and then have access to resources (cf. Whittington, 1989, 1992). In this view, the acquisition of social resources is the result of firms' conformity to social rules (Giddens, 1977: 134; 1979: 69).

All rules are thus enabling, because they provide access to social resources. Essential to strategic choice, resources supply agents with two kinds of facilitating capabilities: allocative and authoritative resources (Giddens, 1984: 258-61). Firstly, allocative resources are capabilities that generate command over material objects (raw materials, means of production, produced goods). Secondly, authoritative resources are capabilities that generate command over persons (spatio-temporal positioning, organisation and relations between human beings, life-chances). Taken together, the resources of allocation and authorisation, as elements in a social structure, provide social agents with the power to reproduce and even transform the social structures that enable them. Consequently, the above analysis of social rules and resources reinforces my critiques of economic and institutional approaches to strategy, described in the previous chapter. It could be said, in general, that most economic strategists (e.g. Ansoff, 1965; Grant, 1991; Kay, 1991; 1993; McGee and Thomas, 1986; Porter,

1985, 1990; Wernerfelt, 1984) focus on the side of resources, emphasising both the individualistic position of strategic behaviour and the enabling nature of national environment. On the contrary, the institutionalist authors (e.g. Powell and DiMaggio, 1991; Zucker, 1988) insist on organisational conformity to social rules, stressing both the determined nature of strategy and the constraints of institutional isomorphism. In this way, a structurationist sociology approach to strategy is innovative and distinctive, as it can combine both rules and resources.

2.5 ADDING CORPORATISM TO THE TAIWANESE CONTEXT

In the last section, I have shown that the structurationist perspective on strategy provides valuable insights into the explanation of the linkages between firm behaviour and social structures (rules and resources). But when applied to a particular social context, such as that of Taiwanese society, this structurationist sociology is obviously so abstract that it is unlikely to link together the substantive components of a firm-in-society model, as a means of expanding the explanatory capacity of the model and extending understanding. A useful way of tackling this problem is to "prescribe a particular way of conceptualising something" (Sayer, 1984: 50). It requires us not only to bring interpretive skills, but also some kinds of pre-understanding of what the context might be about. In this way, this research further calls for the use of corporatist political theory to help explicate particular aspects of the Taiwanese state while acknowledging the importance of the role of the state in structuring firm behaviour. The corporatist theory of the state has already proved important to explaining the character of Taiwan's industrialisation experience as a whole (e.g. Bello and Rosenfeld, 1990: 221; Gold, 1986; Tien, 1992: 37; Wade, 1990; Zeigler, 1988), and is therefore likely to be particularly appropriate to understanding firm-state relations in the Taiwanese PC industry.

In recent years, corporatism as a form of political analysis has had enormous impact on a number of disciplines (Cawson, 1986; Williamson, 1989). But, as Panitch (1980: 159) argues, there is a profound lack of agreement on what the concept of corporatism actually refers to. Some writers concentrate on economic developments alone, others focus on the structure and role of the state, whilst others use it to distinguish between different types of pressure group activity. Here in applying this concept to the study of a novel system of political economy in the Taiwanese context, I shall examine only some key points which are particularly important to this thesis: corporatism as a state form will be discussed in Section 3.3.1; the remaining part of this section will examine the varieties of corporatist forms in which interests are organised and interact with the state.

Summarising the corporatism literature, we can identify as the essential feature of corporatism a distinctive conceptualisation of the relationship between the state and interest groups (Cawson, 1986; Williamson, 1989). For instance, Cawson (1986: 38) defines corporatism as "a specific socio-political process in which organisations representing monopolistic functional interests engage in political exchange with state agencies over public policy outputs which involves those organisations in a role that combines interest representation and policy implementation through delegated self-enforcement". Thus we can see this concept of corporatism combines an important key feature: interest intermediation. The term "interest intermediation" was coined by Schmitter (1979) to capture the reciprocity of the relationship between corporatist organisations and state agencies. In particular, the development of corporatism is regarded by its major theoretical proponents as a middle-range approach to the study of interest intermediation (Grant, 1985; Williamson, 1989).

The way in which organised interests relate to the state raises some of the central questions facing modern societies, not least the distribution of political power and state resources within them, and how the divergent claims of different social

groups can be reconciled. In answering these questions, there are always debates on the different forms of corporatism. It is generally agreed that during the early years much of corporatist theoretical analysis and empirical observation was concerned with the important macro-political questions of system stability through bargaining between the state and peak organisations of labour and capital (tripartism). To some authors, tripartism is the constitutive feature of corporatism, in which it forms a kind of state-imposed class collaboration upon labour, or a means of controlling labour.

By the early 1980s, however, there occurred something of a realignment of corporatist interest. Increasingly, a number of corporatist writers began to argue that the attention afforded to national pacts - or the macro-level - has been unduly narrow, if not actually misleading. These writers (e.g. Wassenberg, 1982) suggest that, below national-level arrangements, between peak associations and the public authorities there exist numerous examples of corporatist arrangements involving associations concerned with more specialised interests and representing particular ones. In addition to "macro-corporatism" there is, less visible but possibly more enduring, "meso-corporatism" based on intervention in individual sectors. Similarly, it is noted that a considerable amount of intervention in industrial policies is negotiated between the public authorities and individual firms, raising the prospect of "micro-corporatism" as well (Williamson, 1989: 164-5). As a result, corporatism can develop at different levels, and the organisations which represent functional interest can vary in the scope of their membership and the degree of inclusiveness of the collective definition of their interests. In short, all the above discussions suggest that the allocation of state resources can be differentiated either at the sectoral level or at the level of the individual firm.

When one applies the diverse literature to empirical research, the presence of notions of meso- or micro- corporatism has two important implications. First, at the end of the previous chapter, I identified one of my subsidiary aims in this thesis as

providing an effective strategy model for government industrial policy. This requires detailed research on industrial policy which represents sectoral as opposed to class interests. Following the discussion in this section, the nature of interest organisations at the meso-level can be studied by identifying a logic of membership and influence and analysing the organisation itself as subject to both sets of opportunities and constraints informed by the structurationist sociology. In particular, I argue that meso-corporatism may be seen as a possible strategy for government to adopt in response to international competition. Similarly, firms embedded in their particular industry can pursue micro-corporatist strategies in order to secure the support of the state.

Secondly, and more importantly, I argue that appreciation of micro-corporatism is critical to explaining the relationships between Taiwanese PC firms and their immediate social context. In Taiwan's case, beginning in the mid-1980s, the lifting of martial law, the death of President Chiang Ching-kuo and the enlargement of election systems have led Taiwan's political leaders to develop a new system of political institutions that reflects a more autonomous civil society (Cheng and Haggard, 1992; Chou, 1991: 50-1; Long 1991: 180-202; Moody, 1992). On the one hand, this political reconstruction has, of course, added to the possibility of conflict between state policy and the business recipe. On the other hand, this reconstruction of *Taiwanisation* has strongly impinged upon the connections between state agencies and individual firms and, as a result, state direct support can be restricted to a limited number of indigenous firms, such as Acer in PCs, Kennex in tennis rackets and Eva Airline in aerospace (cf. Pennells, 1994). This in turn raises the prospect of "micro-corporatism" (Williamson, 1989: 163-4), and we are therefore interested in understanding how this bilateral relationship between the individual firm and state is characterised in Taiwanese society.

2.6 CONCLUSION

In this chapter I have reviewed different forms of knowledge that might be employed to arrive at a useful explanation of strategic differences across Taiwanese PC firms. Any reasoning on this matter depends on how I logically and cumulatively uncover different approaches leading to the characterisation of the empirical world. In examining these issues, I have been drawn into a wider discussion of different methods of strategy theorising, paradigmatic analysis of organisations, a structurationist approach to strategy and a corporatist perspective on a firm-in-society model. The major theme this chapter has revealed is the rule-following and resource-empowered nature of strategic agency. It has also discussed the value of corporatist theory for researching state-firm relations in the evolving Taiwanese PC industry of 1980-1993. The implications of this are more fully discussed in the next chapter in which I develop a tripartite structural theory of strategy.

CHAPTER THREE: THE FIRM IN SOCIETY: CONCEPTUAL FRAMEWORK

3.1 INTRODUCTION

In Chapter 2 I reviewed the theoretical foundations of sociological strategy research. These theoretical investigations suggest the need for a substantial reconsideration. We must look more carefully at the plural rules and resources that inform firms' strategic agency. What we require is a model that is sensitive to the social complexity in which strategy is being made. This model must also be able to link together the behavioural and institutional levels of analysis that are evident in the sociology of organisation and be sensitive to time-space specificity, important to the evolving Taiwanese PC industry of 1980-1993. In this way, the interrelationships between Taiwanese PC firms and their immediate social context can become more systematically theorised and researched.

In this chapter I develop an alternative strategy typology for how empirical work based on this sociological strategy perspective should proceed. In so doing, this chapter will take four parts. To begin with, I will argue the need for a classification scheme in order to approach the empirical material. This provides a basis upon which the following section will introduce three concepts - policy style, business recipe and technology paradigm - that constitute the social structures analysis. The patterning of the three structures indicates the formation of an industry system which leads us to recognise the significance of systemic conflicts in influencing firm behaviour. That done, I shall move on to examine the corporate identities that provide an institutional link between agency and structure. By introducing the conceptual categories of social structures, industry system and corporate identities, I shall argue that these three categories should be brought together in order to explain the different strategic choices that have become established in the Taiwanese PC industry. After all this, a conceptual

framework - a tripartite structural theory of strategy - for this research will be drawn in detail. This chapter will close with a summary leading to the presentation of the remaining chapters of the thesis in relation to this framework.

3.2 THE NEED FOR A CLASSIFICATION SCHEME

As a social science student, I have been active in management discipline for more than twelve years. Despite the breadth of my discipline, I regard myself as a strategist at heart, interested in questions which are of particular interest to researchers in strategic management. However, doctoral programme training enforced me to begin questioning the functions of categories of doctrines, in which we experience diverse disciplines and use our own unique perspective to explain social phenomena. To a certain extent, I came to understand that the confines of one traditional discipline were inadequate to comprehend real-world phenomena.

Researchers in many fields are likewise beginning to recognise that traditional boundaries between fields are limited in studying business competition or firm behaviour (e.g. Cawson et al, 1990; Coombs et al, 1992; Jemison, 1981; Pennings, 1985; Pettigrew, 1992; Porter, 1990). This recognition calls for the use of a more integrative approach which is considered to be more eclectic and multi-disciplinary in the perspective that it brings to the empirical inquiry and mode of analysis (Ansoff, 1987: 514). While the various models in different disciplines are useful for identifying and interpreting strategic aspects, there is obviously also a great need for integrative models that incorporate the accomplishment of different disciplines in order to allow the field to advance theoretically (Shrivastava, 1987).

In this sense, this research is suggested to be interdisciplinary (cf. Cawson et al, 1990: 9-13; Pennings, 1985). The central point of the interdisciplinary approach, as a

research strategy, is the selection of a methodology and an appropriate set of concepts which transcend, rather than reproduce, the boundaries set by academic disciplines. Synthesis between fields then are treated as necessary components of social inquiries.

The process of carrying out such an interdisciplinary approach reflects on the requirements of *a priori* theory that not only gives meaning to observations (Montgomery and Wernerfelt, 1989: 190), but also gives us the basis for a typology of relationships (Doty and Glick, 1994: 244). The challenge at this point is how best to unite theory and experience. Implicit in this challenge is the view that a good *a priori* theory depends on some past observations which are consistent with a body of existing theories.

So when doing empirical study, by drawing on a set of taxonomic categories and some concepts of relevance, the researcher needs to develop a classification scheme that incorporates the holistic principle of enquiry into organisational research (Archer, 1988: 285). Such a categorical classification system is important because it contains commensurate concepts or typologies (cf. Doty and Glick, 1994; Hambrick, 1984) that are internally consistent within the system. Relatedly, these typological principles offer us a broad idea of what we might be looking for and some ways of thinking about the object of our study (Weick 1990; Huff, 1990). It is thus important in the following sections to make clear how these *internally consistent typologies* are developed to construct a classification scheme.

3.3 SOCIAL STRUCTURES ANALYSIS

As discussed in Chapter 1, the influence of the social environment on action is a key factor for researching strategy from a sociological point of view. Addressing how this social environment should be conceived, institutionalist authors have approached

various aspects of contextual structures with which to explain firm behaviour. In the early years, the sociologist Habermas (1973) refers to the late capitalist societies in terms of three key institutions - the economic, political and socio-cultural. More recently, the scope of analysis of social institutions or structures with regard to firm behaviour has widened still further. Technology has been shown as a social force for structuring the institutional environment (Nelson and Winter, 1982; Dosi, 1982; Dosi et al, 1990: 241). On many issues of national importance, corporate political behaviour is proposed to illustrate the successful pursuit of competitive advantage on political action (Yoffie, 1987, 1988; Boddewyn and Brewer, 1994). Studies of industry organisation have demonstrated international competition as a significant factor to illustrate firm behaviour (Porter, 1980). Viewed as a strategic weapon, managing time is introduced to represent the most powerful new external source of competitive advantage (Stalk, 1988). Typical institutionalists such as DiMaggio and Powell (1983) and Scott (1987) stress the importance of the state and professional groups in explaining firm behaviour. Yet each social scheme of institutional strategy research generally has precluded agreement on which of the social structures are the most meaningful to explain firm behaviour.

At the broadest level, it is alleged that social context is too complex, too fraught with diverse factors, to be fully conceived in concrete terms (Cohen, 1989: 30, 88). In addition, it is beyond the scope of a single piece of research to trace all the links between different social forces. Partly as a result, some researchers tend to adopt the idea of "empiricism" (Jary and Jary, 1991: 191) as a means to study the influence of social structures on action. DiMaggio and Powell (1983: 65), for example, suggest that the structures of institutional environments "cannot be determined a priori but must be defined on the basis of empirical investigation". It is similar to what Räsänen and Whipp (1992: 56) propose, that with respect to a national business recipe, it "should not be decided a priori what is the most essential principle and unit of collective action, but the actual combination of principles should be generated from the case itself".

Yet the conceptualisation of social context as a phenomenon of interest to the sociological account for strategy seems to deserve more systematic and logical thinking. There are three reasons for this. *Firstly*, it is evident that Giddens (1979, 1984) treats structural concepts - rules and resources - as an analytical abstraction from concrete procedures of structuration. The identification of social concrete reality is therefore important because it can give empirical flesh to the notion of rules and resources, thereby illuminating the possible interplay between firms' behaviour and their immediate social rules and resources. *Secondly*, such a concrete identification can usefully help to examine the enduring roles of structures clustering or patterning which are critical to explaining the dynamics of institutional environments. *Thirdly*, this identification can also ensure that the relation between various theories of knowledge and structuration theory remains a paradigmatic one, in which accumulated knowledge is applied to an independently constituted set of phenomena. Informed by a set of interpretive typological theories, such a paradigmatic analysis should be more useful for thinking about the ontological reality and the interpretation of research results.

Therefore, in considering the significance of social structures in explaining firm behaviour, a concrete identification is necessary. Methodologically, in the process of moving from the relevant concepts towards the concrete, it is the intimate connection with empirical reality that permits the development of a relevant and valid theory (Eisenhardt, 1989b). Eventually, a triple classification of social structures - policy style, business recipe and technology paradigm - was evolved by means of "successive approximations" (Sayer, 1992: 189). In the following three sections I shall demonstrate why the three social structures putatively represent a useful scheme for a sociological approach to the study of firms' strategic agency.

3.3.1 The State and Policy Style

Bringing the State Back In

In recent years, there has been a growing demand to "bring the state back in" as a key explanatory variable in social analysis. As Skocpol (1985) suggests, there has been a paradigm switch in the Western social sciences in the 1970s: from society-centred work, which treated the state as a dependent variable, to theories which treat it as an independent variable. Increasingly, this switch has been highlighted in an outpouring of theoretical and empirical studies from diverse disciplines. Partly informed by this trend, institutionalist theorists call attention to the nation-state as one of the primary modern shapers of institutional forms (DiMaggio and Powell, 1983: 147; Scott, 1987; Brint and Karabel, 1991: 347-8). As subsequently applied to strategy (e.g. Whittington, 1993: 144), this tendency is seen to combine both state strategies and business strategies in a framework by reference to which the competitive advantage of nations can be truly built (cf. Fligstein, 1990: 7-8; Porter, 1990).

In retrospect, the state has been defined in diverse ways, with substantial variation among approaches. As called upon by Evans et al (1985: 363), instead of promoting more grand theorising about the state in general, scholars from various areas are encouraged to use wide-ranging studies to improve conceptualisations, and generate new hypotheses about the structures and actions of states under various circumstances. Because concepts are fallible (Osigweh, 1989), any set of propositions should be subject to the ontological test of reality. In this sense, my research shows that in a vast and diverse theoretical literature, interpretations of the role of the state generally range from the extreme pluralist view (which sees no structure) through a corporatist conception to an orthodox Marxist belief (which sees no agency) (Cawson, 1986: 7; Dunleavy and O'Leary, 1987). In this distinction, pluralist and neo-Marxist's

perspectives are treated as society-centred approaches to social research; while the corporatist's is a state-centred one.

In considering the linkage of the state into the Taiwanese PC industry, both pluralism and neo-Marxism are rejected as over-general theories, with the former defining the state as the factor of cohesion in society, whilst the latter sees it as the mechanism for reproducing the relations of class domination (cf. Gold, 1986; Zeigler, 1988). Both theses are eventually forced to recognise the role of the state: pluralists chance upon the importance of initiatives by politicians and government agencies; and neo-Marxist or structural-functional studies tend to conclude that state-building is the product of struggle, rather than the automatic result of functional differentiation or political modernisation¹ (Skocpol, 1985: 4-5).

In contrast to the pluralist and neo-Marxist approaches of society-centred theories, the corporatist approach highlights the importance of the state, assuming that the state can be treated as a relatively independent actor pursuing its own distinctive goals that do not necessarily reflect the interest generated from the society. It has drawn upon the idea of the state having an internal structural logic, being constrained by dominant social forces and being an autonomous organisational entity in its own right (Williamson, 1989: 121-4). Because of its relative autonomy, the state could transcend structural boundaries of society to act for ends opposed to the interests of the dominant class, and so transform the social structure. In other words, in contrast to both the pluralist and neo-Marxist approaches, the corporatist approach believes that the state is not necessarily a passive recipient of social pressure, though it may have special relations with certain social groups - such as industry firms. State policy at any time and place thus can be considered more or less independent of action by the

¹For more on the pluralist and Marxist's political theories, see Clark (1991) and Dunleavy and O'Leary (1987).

individuals or groups occupying strategic positions in the state apparatus, though it may be a response to certain social demands (Gold, 1986: 18-9).

Policy Style

In the previous section, I identified the state as a key variable in social analysis for understanding the scope of institutional processes. This emphasis on the role of the state brings our attention to the area of policy-making and the implementation process. From here, we see one important social structure - policy style - that represents the ways in which the state, or policy-makers, develops "standard operating procedures for handling issues which arrive on the political agenda" (Richardson et al, 1982: 2-3). On the basis of policy style, the policy agents share a perception that comes from sustained attention to a given policy debate. The policy style is the political sub-culture with its associated rules that "legitimate negotiating, bargaining, log-rolling, give and take, the gaining of consent as against unilateral power of coercion" (Richardson et al, 1982: 5-6). For example, the Taiwanese policy style, as we shall see, provides firms with rules associated with the interests of the KMT party, developmental state, technology venture, respect for I.P.R. and own-brand marketing. Insofar as firms conform to policy style rules, they become legitimate and the policy style provides them with the state resources that are capable of empowering their actions. By conforming to policy style rules, for example, firms may get access to state contracts, government subsidies, assistance and social prestige.

In general, the metaphor of policy style is also understood as policy networks, policy communities or administrative culture (Kenis, 1992; Marin and Mayntz, 1991; Mazey and Richardson, 1992; Waarden, 1992). Though used by different scholars, these notions have in common their emphasis on dealing with the configurative aspect of interest intermediation behind *corporatist* arrangements (Schubert and Jordan, 1992: 1).

However, as a means of distinguishing among these notions, I will use Richardson et al's (1982) term of policy style to denote politically institutionalised patterns that are capable of generating structural rules and resources available for action. According to Richardson et al (1982: 13), the policy style refers to the interaction between (a) the government's approach to problem-solving and (b) the relationship between government and other actors in the policy process. It is worth noting that this notion of policy style is not exhaustive, but can be used at different levels. Raab's (1992) analysis of education policy and Smith's (1992) study of agriculture demonstrate that the concept is useful either at a functional aggregated (e.g. finance, labour and education) or industrial area. In addition, according to Giddens (1989: 19), the notion of social structure is defined as institutionalised patterns "in how people behave and in the relationships in which they stand with one another". As a consequence, in order to apply this notion of policy style to help characterise the relationships between political structure and firm strategy, I shall define policy style in terms of two features, i.e. in terms of how state institutions operate in the process of economic development and in terms of the relationships between the state and business. Not only can this definition be consistent with Giddens' (1989: 19) concept of social structure, but also it can embrace Whitley's (1992a: 119-65) discussion of political institutions and state policies, critical to the function of the business recipe that has become established in the process of economic development. Here, the structure of business recipe represents another important social structure for constructing firm behaviour, and it will be discussed in the next section.

3.3.2 Business Recipe

In DiMaggio and Powell's (1983: 47) formulation, the nation-state and professionals are the primary modern shapers of institutional forms. While both are forces for strategy rationalities, they do not necessarily espouse similar institutional

forms (Scott, 1991: 508-9). In fact, in addition to introducing policy style as an important institutional structure, organisational sociologists are conceptualising the business recipe, or system, within which organisations of varying types operate. The notion of business recipe, or system, was proposed by Whitley (1990, 1992a, b). According to Whitley, a business system is a distinctive configuration of market-hierarchy relations that become established in its specific social context. As Lane (1992: 64) observes, the notion of Whitley's term 'system' "does not imply a functionalist equation of system durability with effectiveness or success". In order to integrate social structures into patterning as a means of erecting boundaries between 'structures' and 'system' as complementary approaches to strategic choices and differences, I shall therefore prefer to use the term 'business recipe' instead of business system. In fact, throughout Whitley's work, the two terms are sometimes used interchangeably (e.g. Whitley, 1992e: 125)

Compared with Spender's notion of industry recipes, Whitley's (1992a, b) interest in business recipes represents a shift in unit of analysis from the industry to a broader national framework. These business recipes are the result of the institutional environment in which they are developed. For example, there seem to be significantly different business recipes in East Asia (Whitley, 1992a) and Europe (Whitley, 1992b). Once established, these recipes offer rules of the game by reference to which firms' behaviour is evaluated and business organisations achieve their meaning. For example, Taiwanese business recipe offers rules of strong family control, opportunistic growth patterns and low commitments to market exchange partners that govern firm behaviour (Whitley, 1992a). Following these business recipe rules in their actions, firms are able to communicate with local business partners and workers. While the recipe offers guidance for firm's action, it also points to a set of appropriate resources, as well as being a source of legitimacy. For example, once legitimate in conformity to business recipe rules, firms may get privileged access to business recipe resources, such as business contracts, loans, market networks, skilled workers and so on.

According to Whitley (1992), the major characteristics of business recipes can usefully be described under three broad headings derived from the major components of hierarchy-market configurations: the constitution of firms as key economic actors, their interconnections in markets, and their internal systems of authoritative, coordination and control. First, the nature of firms as dominant economic actors has two key features. These two features include the ways in which decision-making discretion is allocated and exercised and patterns of firms' growth. The second area concerns the structure of market relations. This includes the ways in which firms compete and cooperate with each other, both within and between industrial sectors. Finally, the nature of authoritative coordination within firms, including the type and degree of mutual employer-employee commitment and loyalty. Taken together, these 8 characteristics² constitute a particular type of social structure, referring to the *ways* in which firms function as economic actors, and to the *relationships* both between firms in the nation state and between owners, managers and workers within the organisations. Within the scope of social structures analysis, both the concepts of policy style and business recipe are thus internally consistent in relation to Giddens' (1989: 19) definition of social structure.

3.3.3 Technology Paradigm

The emergence of new technologies, or innovation, and the diffusion of their effect through society are one of the main reasons why in modern societies we have not seen a stationary state (Nelson and Winter, 1982; Porter, 1985: 164; Schumpeter, 1934). The rapid world-wide spread of technology is upsetting established power hierarchies, sharpening economic competition, bringing new actors into the game and

²It is true that Whitley continues to elaborate these characteristics. In his recently edited book - European Business System (Whitley, 1992b), for example, Whitley introduces 16 characteristics of business recipes, or systems. In noting this change, my strategy in employing his concepts is designed to focus on the 8 characteristics which are central to his work.

weaving a web of much tighter interdependence among nations. The advent of microelectronics, for example, was enormously important in empowering Japanese firms in numerous electronically based industries. The emergence of the PC gave Apple the opportunity to become one of the largest computer companies in the world. In my case studies, it also provided an opportunity for Taiwanese firms to gain a position. In order to provide a truly sensitive designation of social structures analysis, I suggest therefore that technological knowledge cannot be isolated from the broader institutional context.

Like policy style and business recipe, I propose the technology paradigm as another significant type of social structure influencing firms' behaviour in modern societies. Viewing social structure as both process and form, technology is not treated as a physical object but is viewed as "an occasion that triggers social dynamics" (Barley, 1986: 79) which, in turn, shape organisational activities. The notion of technology paradigm was firstly used by Dosi (1982). Based on Kuhn's concept of scientific paradigm, Dosi (1982, 1984) defines a technology paradigm as an exemplar, a particular scientific problem-solution that is accepted as successful and which becomes the basis for future work. Based on this paradigmatic idea, technological changes or innovation are generally based on a variety of knowledge sources which inevitably include an accumulation of the competence of technological and industrial actors.

Closely related to this paradigmatic idea of innovation is the concept of evolutionary economics (Nelson and Winter, 1977, 1982; Saviotti and Metcalfe, 1991). In a somewhat similar way, although starting from quite different premises, Nelson and Winter (1977) introduce the concepts of technological regimes and natural trajectories, Sahal (1985) that of technological guideposts and Whipp and Clark (1986) that of repertoires. In general, these concepts all point towards some degree of invariance in the technology paradigm.

Here my use of technology paradigm is quite consistent with Dosi and Nelson's ideas of paradigmatic changes in technology, though I extend this approach to embrace also major breakthroughs in the management of a particular industry during its history (Jones and Womack, 1986). The latter refers to both internal operations of the firm and the external industrial organisation of the suppliers, distributors and consumers that feed the knowledge pool of the industry. In general, the technology paradigm is made up from industrial activities which define the standards of organisational effectiveness set by the most successful firms in their particular fields. With respect to the structures of policy style and business recipe, the paradigm is specifically defined as a particular type of social structure, referring to the ways in which industrial operators behave in the industry and to the dominant exchange relationships.

Overall, then, the notion of technology paradigm is to be conceived as predominantly sectoral, although it may interact with the national policy style and local business recipe in a polity. As discussed, the paradigm is structured within an industry, and it builds cumulatively to shape industry actors' future search for innovation. When defining the innovation processes through which institutions shape organisational structure and action, the technology paradigm is both an exemplar and a set of heuristics (Dosi, 1988a: 1127). In order to demonstrate their correctness and modernity, firms thus have a tendency to follow the technology paradigm. *recipe. always?*

Given this concept of evolving technology paradigm, it becomes necessary not only to discuss it in terms of a technical trajectory which provides rules that can be followed, but also in terms of resources to be used meaningfully. In particular, when a technology paradigm becomes institutionalised, it brings with it rules of conduct to firms, offering the directions for searching market opportunity and forming the grounds for formulating technology more surely. Also, it provides resources in the sense of legitimacy, which too will encourage the acquisition of other structural

resources. For example, PC technology paradigm provides firms with overall rule of open systems (McKenna, 1989: 163-7; Grove, 1990). By adopting an open systems rule, firms have easy access to technical knowledge, choice of off-the-shelf components, distributors and skilled labour. The three social structures - policy style, business recipe and technology paradigm - will be further compared and empirically discussed in Chapter 5.

3.4 FROM SOCIAL STRUCTURES TO INDUSTRY SYSTEM

3.4.1 Structures Patterning

In the foregoing three sections, I introduced three sets of social structures - policy style, business recipe and technology paradigm - each structured in both rules and resources for guiding and empowering firm behaviour. As discussed in the previous chapter, rules are procedures of action and interaction, enabling firms to understand how to proceed in a meaningful way. In order to adapt to the environment, firms need to conform to certain rules of conduct, with the acquisition of available resources. Comprising rules related to strategy content and resources associated with power bases of action, these three structures provide a wide range of options that permits genuine choice. Though these are not the only ways in which society is structured, I shall demonstrate in later chapters that the three structures are particularly important in explaining strategic differences amongst my nine case study firms.

As well as delimiting certain domains of acknowledged structural properties, this tripartite scheme of social structures emphasises the socially constructed nature of corporate strategy. According to this scheme, society not only provides a diversity of structural rules between which economic actors can choose for deliberate action; it also provides a plurality of structural sources of power essential to strategic choice. In

searching for possible courses of action that are capable of generating social legitimacy, firms can pursue policy style-oriented, business recipe-oriented or technology paradigm-oriented strategies.

Accordingly, my position on strategy analysis emphasises that firms' agency depends upon the three social structures that offer a variety of social rules and resources available for action. However, these structures are not mutually exclusive, but are more or less overlapping depending on the degree of structures clustering or patterning in a particular locale. This aspect of structures patterning leads to the analysis of social system. According to Giddens (1984), a system is an arena of social activity, with the patterning of social structures taking place. With a social system, the term "patterning" refers to "the degree to which each part of a social system has direct ties or interchanges with every other part" (Giddens, 1977: 124). Because patterning refers to ties and interchanges, tensions or conflicts between social structures are thus critical to explaining the dynamics of institutional environments. In other words, what I suggest is to integrate the structures (policy style, business recipe and technology paradigm) into patterning so as to examine the significance of systemic conflicts in explaining firm behaviour. As a mode of social activity, we may then consider an industry system which is understood as a particular type of social system, with a formation of social structures of its own. The implications of this are further discussed in the next section.

3.4.2 The Formation of An Industry System

Investigating how managers deal with uncertainty, Spender (1989) identifies management function as the task of directing and manipulating a shared knowledge-base of an industry (cf. Child, 1988; Hellgren and Melin, 1992: 186; Shearman and Burrell, 1987). He calls this knowledge-base 'industry recipes'. But where do industry recipes come from? In view of the connecting of industry recipes within attendant

social formations, there is a vagueness and looseness in this group-level concept which subsequent writers have not been inclined to remedy.

In addition, Spender is restrictive in suggesting that "competitive advantage generally lies in (the) knowledge-base rather than in a tangible resource" (Spender, 1989: 1-2). It seems to me, then, that this knowledge-base refers only to rules of the game. As I have argued so far, appreciation of both rules and resources is critical to explaining firm behaviour.

By combining both rules and resources into the account of firm behaviour, I suggest that there is an industry system which affords firms certain definite powers with which to empower their actions. This system is made up of the structures of policy style, business recipe and technology paradigm. Each of the structures is critical to explaining the formation of an industry system. In more detail, in view of the emergence of an industry, there must be a structure of policy style that regulates types of interest intermediation. Equally, there must also be a structure of business recipe within which firms of varying types operate. Finally, there must be available a technology paradigm that triggers social dynamics and defines innovation directions. All three of these structures refer singly to a variety of institutionalised patterns that come together in a given social locale to direct industry activities.

Within an industry system, the structures are interconnected. Even the most insulated business recipe cannot divorce itself from the wider policy style and technology paradigm with which it is interrelated. In Taiwan's PC industry, for example, the technology paradigm tendency towards international marketing and the policy style search for international respectability have led to conflict with the business recipe tendency towards cloning and counterfeiting. It may seem that this conflict is to be found in the patterning of social structures. In other words, in moving from the notion of social structures to industry system analysis, structural intersecting implies


potentially the rise of systemic tensions or conflicts. How firms negotiate the conflicts then is of significance to understanding the relationship between agency and structure. In order to demonstrate how firms deal with the conflicts, I shall introduce the concept of corporate identities that provides a linkage between the individual firm and its three attendant social structures. This concept will now be discussed.

3.5 CORPORATE IDENTITIES

An adequate theory of strategy requires attention both to the external environment and to the internal organisation (Pettigrew, 1985). Early versions of institutional theory placed particular emphasis on the character of institutional isomorphism, thereby ignoring the active capacities of human agents. Increasingly, there has been a tendency to recognise that firm diversity is an essential aspect of organisational analysis (e.g. Goodstein, 1994; Oliver, 1991). Central to this concept of firm diversity is the intrinsic human potential for agency. For instance, an explanation of strategic action in terms of managerial agency involves the claim that the action was self-determined by the agent, rather than being solely determined by any structural conditions (Greenwood, 1991: 70). Such explanations imply that the firm has a more or less free choice in deciding which means and ends of action to engage in, and thereby formulates a number of possible courses of action (Whittington, 1989, 1992).

Essentially firms are strategic actors whose internal traits are central to the choices exercised by them. These internal traits construct their uniqueness which is a product of firms' institutional links with the society. The uniqueness of firms offers shared organisational beliefs that cause them to act in order to respond to institutional pressures. The focus then is on different social relationships, in so far as firms' capacity to respond derives from the complex structures of society. Throughout this thesis, I shall define these social relationships as corporate identities that carry with firms a

certain range of forces or inspirations that establish the objectives towards which firms should direct their activities, excluding others (Giddens, 1984: 84; Cohen, 1989: 207-10). Having said this, I suggest that strategic choices should be understood as shaped by the peculiar social identities of the company. In other words, given their particular identities that confine them within social structural complexity, firms are exposed to the influence of systemic conflicts, and they are consequently forced to choose between them. Recalling my discussion of social structures and industry system, firms' identities in this sense are positioned in their immediate industry system constituted by the structures of policy style, business recipe and technology paradigm, and in relation to other agents (Giddens, 1984: 83).



While allowing both rules and resources into the account of agency, this notion of social identities of heterogeneous firms additionally provides a reformation for the recent resource-based theory of strategy (Penrose, 1980; Wernerfelt, 1984; Grant, 1991; Mahoney and Pandian, 1992). The resource-based approach stresses the significance of organisational capabilities that are unique to each firm. Also, firm uniqueness matters, and firms will respond differently to industry structure conditions. In broader terms, organisational capabilities can only be distinctive if they are derived from characteristics which other firms lack. What appear to be unique characteristics then are obviously "made on the basis of some definite social criterion or criteria" (Giddens, 1979: 117-8), such as political links, business relationships, reputation, kin relation, education and age-grade (cf. Giddens, 1979: 118; Kay, 1993: 65) - hence a concern with the social context. In this way, the resource-based approach must be modified in certain respects, and elaborated in others, in order to embrace the diverse and contradictory nature of social structures proposed by the structurationist ontology.

In general, the resource-based approach of strategy emphasises the influence of organisational resources, such as core competences and strategic assets, which serve as the driving force for the growth of the firm (Wernerfelt, 1984: 171). Such an emphasis

tends to see organisational resources as valuable while minimising the significance of the constraining aspects of "resources". Indeed, even exponents of the resource-based theory, Mahoney and Pandian (1992: 365) admit that these firm-specific resources may not only "enable the firm to generate rents from a resource advantage" but also "limit the choice it may enter and the levels of profits it may expect". It is, after all, certain modes of organisational resources that can only be effectively performed by firms. Therefore, I suggest that "firm's unique characteristics" (Grant, 1991: 133) are not to be identified solely with distinctive resources; Instead, they should rather be seen as social identities which refer to the "positioning" of the firm within a particular social category (Giddens, 1984; 89). This category in turn connects the firm both with a variety of social resources that empower its action and with certain rules that govern or constrain its action. Firms' identities are thus socially structured by their immediate social context, and these identities establish their social positions that will lead them to make strategic choices differently.

3.6 THE CONCEPTUAL FRAMEWORK

Before going on to outline the overall theoretical framework within which the relationships between firms and society can be analysed, a brief discussion of time and space notions is necessary. Undoubtedly, all social interaction research in social science is confined within time-space boundaries. Throughout his work, Giddens (e.g. 1979: 53-65) makes a great deal of these notions, arguing that sociology (e.g. functionalism and structuralism) has never come to grips with their importance. Here in my formulation of the structurationist ontology of strategy, the time-space unit offers a way of mapping structures into system and connecting choices with identities.

Considered from a different angle, a system is not a structure in itself. Rather, a system exhibits social structures in the procedures whereby it is reproduced (Giddens,

1984: 17). Thus, because a system always is in the process of being reproduced by the patterning of social structures, it cannot be abstracted from time and space. Equally, a firm's strategic choice is influenced by its social identities that establish its earlier strategic positions. To understand corporate strategic differences, analysis thus needs to introduce a particular series of events that provide methodological points for entering the processes linking corporate identities and strategic choices - the former explaining the latter (Giddens, 1979: 228-9; Whipp and Clark, 1986: 18).

Where are we now? Originally, in trying to build a socially-embedded theory of strategy, I introduced several elements that have proved the ontological relevance of the subject-matter. Let me now summarise these elements in one coherent framework that can be analytically operationalised for researching corporate strategic differences. In so doing, Figure 3.1 is drawn for discussion in detail.

As Figure 3.1 shows, I suggest that the combination of the four conceptual categories - social structures, industry system, corporate identities and strategic choices is critical to explain strategic differences. In the social structures analysis, I proposed three sets of social structures - policy style, business recipe and technology paradigm - each referred to a collection of rules and resources for guiding and empowering firm behaviour. Following rules in their actions, firms are legitimate and then have privileged access to resources for competing.

As well as providing the dynamic of industrial change and firms' activities, the patterning of the three structures constitutes an industry system that leads us to stress the significance of systemic conflicts in structuring firm behaviour. In moving from macro/meso levels analysis to micro level analysis, I emphasise that firms' particular identities are important, and they will respond differently to the three axes in order to negotiate the conflicts.

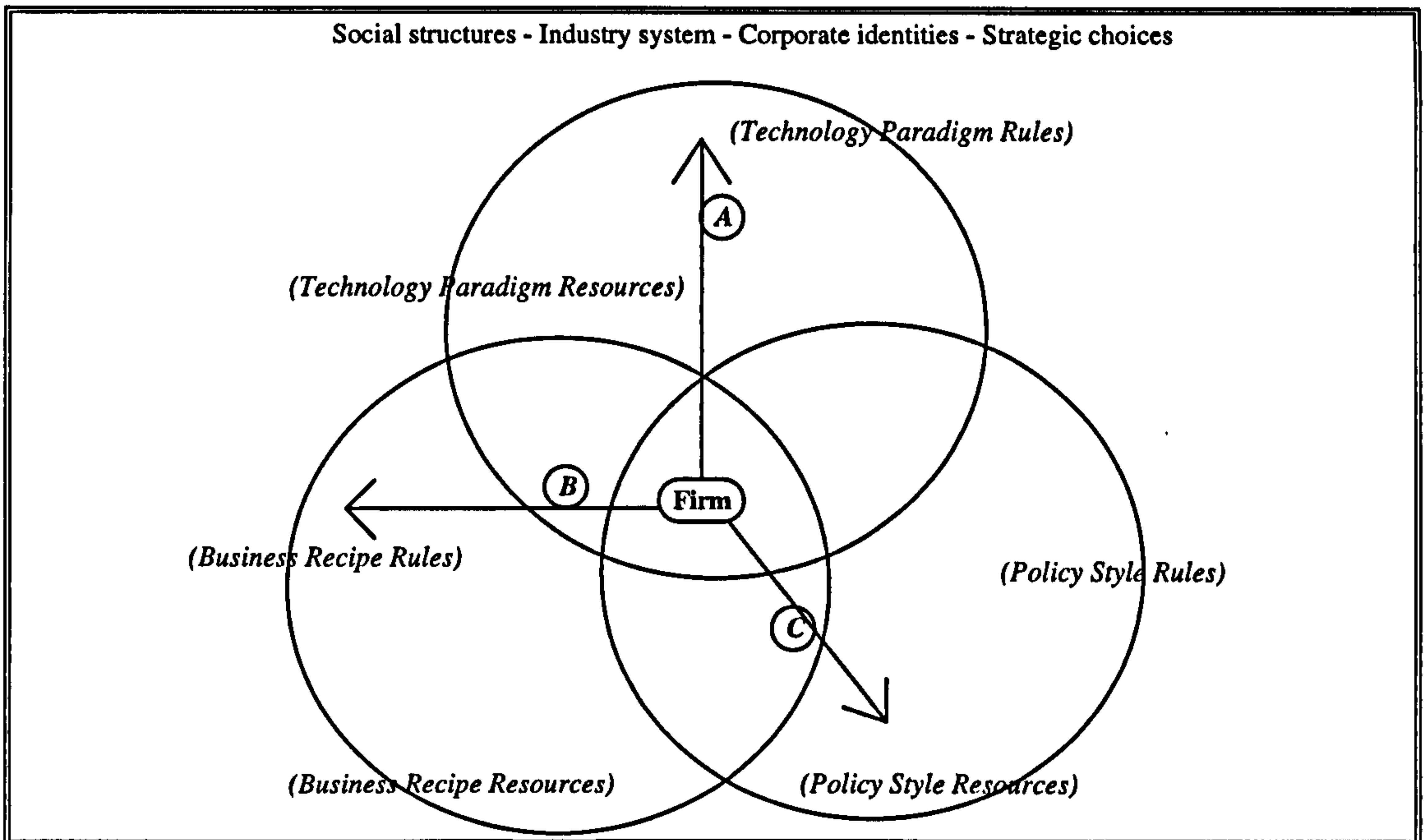


Figure 3.1 The conceptual framework: A tripartite structural theory of strategy

In relation to Figure 3.1, the three circles indicate types of strategy legitimate within each of the policy style, business recipe and technology paradigm, and therefore affording access to particular resources. In this example, the three axes are *orthogonal*, indicating that greater conformity to one of the sets of rules can isolate it from the legitimacy and resources of the others. As an agent, a firm can thus choose to optimise its strategy on any one of the three dimensions, or some mix between, in order to negotiate the conflicts. Three examples can illustrate. As point A of Figure 3.1 shows, a firm can choose to optimise its strategy by conforming to certain technology paradigm rules. The point A implies an area where technology paradigm rules conflict with both policy style and business recipe rules. Therefore, by pursuing the point A oriented strategy, the firm is legitimate in conformity with technology paradigm rules and so may have the advantage of access to technology paradigm resources. However, this pursuit may not enable the firm to have access to resources from the policy style and business recipe.

As point B of Figure 3.1 shows, this is an area where business recipe rules coincide with technology paradigm rules but conflict with policy style rules. Therefore, by pursuing this point B oriented strategy, a firm may get resources from both business recipe and technology paradigm but may not get as many as policy style resources.

Equally, point C of Figure 3.1 indicates an area where policy style rules and business recipe rules coincide but conflict with technology paradigm rules. Therefore, a point C oriented strategy implies that a firm chooses to conform to the rules of the policy style and business recipe instead of pursuing a technology paradigm-oriented strategy. This conformity in turn would enable the firm to have access to policy style and business recipe resources but would not enable the firm to have access to technology paradigm resources.

In relation to Figure 3.1, it is in this conception of society that firms operate, and this will underlie the presentation of my case studies. Following Figure 3.1, the overall question for this research is to ask: how do we explain corporate strategic differences in terms of these three structures? At a more theoretical level, the central inquiry will be to assess the utility of the framework itself and its potential for elaboration into a more comprehensive model of firm-society relations through the empirical findings of this and future research.

*Why orthogonal?
Why these 3?*

3.7 CONCLUSIONS

I have now constructed the conceptual model. Chapter 2 reviewed theories implicit in sociological strategy research but sensitive to the study of Taiwanese PC firm strategy. Informed by this review, this chapter began assembling the theoretical pieces that contribute to the building of an alternative theory of corporate strategy. I

argue that social structures, industry system, corporate identities are interrelated in a complex framework which is central to understanding the nature of strategic choices and differences.

Such a framework suggests that the formation of strategy depends on the character of the prevailing social context. It further proposes the three structural principles of policy style, business recipe and technology paradigm, each deeply structured in both rules and the resources they offer actors. Basically, this is the mental map I shall use to explore the object territory. In Chapter 5, I will discuss these three structures in terms of my case studies. In Chapter 6, I will examine how these three structures are interrelated in the Taiwanese context and so constitute the system of the Taiwanese PC industry. That done, in Chapter 7, I will introduce the social identities of my nine case PC firms. These identities will be used to help explain my case firms' divergent strategic choices discussed in Chapter 8. First, however, I want to outline some methodological issues and principles and determine what is appropriate for this research.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 INTRODUCTION

In Chapter 3 I built a tripartite scheme of corporate strategy in order to take into account the structures of policy style, business recipe and technology paradigm. The patterning of the three social structures constitutes an industry system which emphasises the significance of systemic conflicts in structuring firm behaviour. In order to negotiate the conflicts, firms have to choose to conform to certain social rules in order to acquire resources necessary for action. Here, choice is possible, because in the industry system there are three social structures providing social rules and resources. The grounds for why firms choose their particular strategies can be analysed in terms of their social identities. The identities position the firms in a social place in which their different connections with the three structures drive their actions. In sum, because of varying corporate identities, firms will make their strategic choices differently from one another within the industry system. In this chapter I will describe a method for researching and comparing such differences across my case study firms.

To begin with, I will discuss the relevance of structurationism as a methodology for guiding empirical research. I will also consider the usefulness of comparative case studies as applied to studying corporate strategic differences. Secondly, I will justify the selection of nine Taiwanese PC firms. Thirdly, I will examine the main features of my method, including the techniques of data collection and validity problems. The following four chapters will show that synthesis of the four conceptual categories - social structures, industry system, corporate identities and strategic choices - is critical to explaining strategic differences across the nine case study firms.

4.2 BASIC METHODOLOGY - STRUCTURATIONIST COMPARATIVE CASE STUDIES

4.2.1 Structurationism as a Methodology

For years, scholars in a diversity of fields have made use of concepts drawn from structuration theory in pursuing empirical enquiries. Aside from what has been discussed in previous chapters, an earlier example is by Charles Smith (1983) who uses some of the general ideas of structuration theory to examine the pure-bred beef business in Canada. But while many have attempted to employ structuration theory in a direct way in empirical research, others have taken a more negative attitude. In other words, they have stressed the irrelevance of structuration theory to empirical research, in that theory provides few, or no, useful pointers to the conduct of empirical research.

For example, Cohen (1989), though basically sympathetic to Giddens, argues the difficulty of developing a research program in a conventional sense from structuration theory. According to Cohen (1989: 280-3), structuration theory is designed to address a set of issues that arise before decisions are made on the kinds of knowledge it is appropriate to pursue. The ontology proposed by structuration theory establishes generalisation at a range of levels that cannot be made in the empirical social sciences, because any generalisations are subject to a clear historical and geographical specificity. Therefore, Cohen concludes that structuration theory does not propose empirically relevant accounts of substantive circumstances or events, it does not provide a method of theory construction, and it is not a "grand theory" for the systematic integration of concepts, or the progressive accumulation of social scientific research. In a similar vein, applying structuration theory to ontology rather than epistemology, Gregson (1989) contends that concepts connected with structuration make up a "second-order theory", concerned with conceptualisation of the general

constitution of human society and distinct from "first-order theory", which generates concepts that apply directly to specific empirical setting.

As we can see, the above discussions touch on one of the hotly debated issues in social science in recent years, namely, the relationship between theory and empirical work. For researchers, who see theory as a way of conceptualising something, theory provides an explanation for empirical founding. For them, in Giddens' own words, "structuration theory will not be of much value if it does not help to illuminate problems of empirical research" (1984: xxix).

From this perspective, Giddens himself declares structuration theory plays a "sensitizing" role in relation to social theory. The concepts "should for many research purposes be regarded as sensitizing devices...useful for thinking about research problems and the interpretation of research results" (Giddens, 1986: 326-327). He translates this sensitizing role into a series of propositions about empirical social research that are set out most completely in *The Constitution of Society* (1984). He begins with a summary of the aspects of structuration theory that he considers most relevant to empirical research. These include his emphasis on the knowledgeability of agents and their boundaries; the importance of day-to-day life in understanding the reproduction of institutions, and of routine activity and ontological security; the importance of the context of action and of position-practices; the variety of possible meanings of constraint; the importance of structural principles in specifying types of society; the centrality of studying power; and the importance of the fact that the knowledge produced by social scientists can be learnt by the lay actors and incorporated into action (Giddens, 1984: 281-4).

However, for those scholars like Cohen and Gregson, these abstract conceptual schemes are too far removed from the groundwork of empirical research to be of much value in guiding it. That is to say, they lack the degree of specification required for

empirical work. Since all social scientists ultimately are concerned with the production of knowledge, it may seem peculiar that structuration theory does not begin with postulates regarding the methods and objectives of theory and research.

Again, in a reply to some critical reactions to his statements about empirical research, Giddens makes a rough distinction between theory, as a generic category, and theories, with the latter term referring to explanatory generalisations. Structuration theory therefore clearly belongs to the first type rather than the second:

As I have pointed out in *the Constitution of Society*, the significance of "theories", as compared to "theory", can easily be exaggerated. Some writers are prone to pour scorn upon the tendencies of the social sciences to produce abstract conceptual schemes at the expense of explanatory generalization - theory, rather than theories - but I do not think such complaints for the most part are justified. No doubt many arid conceptual webs are spun, but so also are many vapid or uninteresting generalizations proposed. "Theory", in my view, is at least as important in the social science as theories; I would not accord one logical priority over the other.

(Giddens, 1989a: 295)

It is evident here that Giddens treats "theory" as grand abstraction as contrasted to a set of generalised "theories" focused only on empirical grounds of the individual types (Merton, 1968; Pinder and Moore, 1980). Rather than proposing structuration as an empirical method, Giddens (1989a: 296) suggests an eclectic approach to method, which "rests upon the premise that research enquiries are contextually oriented". The eclectic research methods adopted should be the ones relevant to the aims of research, and all methods have their appropriateness. He again elaborates on possible research guided by structuration theory, going as far this time as outlining a "structurationist programme of research".

Such a programme would look at the patterning of social structures across time and space. Also it would be open to the way in which reflexive intrusions of knowledge influence social reproduction, and to its own impact on its object of study (Giddens, 1989a: 300). Thus, when applied to empirical research, structuration theory represents the solid form of prescription that catalogues the elements which make up the social world. It provides in a sensitive way the major building blocks to help construct empirical research in social science which should be concerned with understanding social phenomena, as opposed to producing general theories.

In order to employ this sensitising device and thereby expose a subject-matter to the structurationist notions of action and structure, Giddens identifies two forms of methodological bracketing which can facilitate analysis of these practices: we can engage in "strategic (conduct) analysis", looking at what actors do, how they reflexively constitute their activity, the implicit rules they follow; or we can engage in "institutional analysis", the analysis of the patterning of social structures. The point of such methodological bracketing for Giddens is to indicate two principal ways in which the properties of society may be approached. In this, his suggestion is methodological rather than substantive (Giddens, 1979: 80). Specifically, strategic analysis means studying the way "in which actors draw upon structural properties in the constitution of social relations, while 'structure' here appears as actors' mobilisation of discursive and practical consciousness in social encounters". In contrast, institutional analysis "places an *epoché* upon strategic conduct, treating rules and resources as chronically reproduced features of social systems" (Giddens, 1979: 80). Since this is a difference of emphasis, there is no clear-cut line that can be drawn between these, and each has to be in principle rounded out by an appreciation of the duality of structure.

For Giddens, these two types of analyses therefore are not two sides of dualism, but in fact part of one "moment": the setting out of sets of concepts, and understanding our subject of study. When subject to careful research design, the idea

of methodological brackets can play an important bridging function between the ontological insights of structuration theory and the specific detail of empirical research (cf. Stones, 1991). Accordingly, against the inappropriateness of ontological relevance but seen in terms of being filtered into the empirical material, the practical application of structuration theory is profoundly characterised.

Informed by this structuration programme, research into corporate strategic differences should therefore proceed from two directions. Fundamental is an analysis of strategic conduct - an attempt to see how firms draw upon rules and resources in the process of social construction. However, this understanding must be tempered by a detached institutional analysis. Institutional analysis should be directed at recognising the patterning of social structures which govern and constrain firms' actions (cf. Whittington, 1989: 118). It is at these points that structurationism as a methodology has most to contribute to firm-society relations.

4.2.2 Comparative Case Studies

The nature of the subject-matter determines the choice of appropriate methodology (Aldag and Stearns, 1988; McGuire, 1986). In this way, the structurationist framework as a methodology for this research has been specified in the previous section. In this following section, I will focus on the research design to be situated between grand theory and empirical setting, at one level down from general principles of methodology.

The theoretical discussion of the last three chapters establishes the basic grounds for deciding how strategic difference should be researched and in what sorts of human agency and social structures. Against the institutionalists who are at too high a level of aggregation and tend to be deterministic, I asserted in Chapter 3 the importance both of examining the strategic diversity of individual firms and of

investigating the processes by which this diversity emerges. The challenges for the empirical research then come in trying to make sense of the diversity across firms in a way that allows similarities and differences to be analysed and explained in terms of my tripartite structural strategy of ideas. Research should therefore proceed by case-oriented comparative analysis on particular firms, rather than by variable-oriented statistical survey: the former normalising, the later particularising variant relations across firms.

In practice, case-oriented studies have been used recently as an innovative approach into strategy research by virtue of their rigorous techniques of inquiry that are sensitive to complexity, and historical and geographical specificity (Dyer and Wilkins, 1991; Eisenhardt, 1989, 1991; Harrigan, 1983; Mitroff and Mason, 1982; Pettigrew, 1992; Ragin, 1987; Yin, 1984, 1993). They are suited for addressing empirically defined sociological outcomes, and they are often used to generate new conceptual schemes as well. In terms of comparison, the deductive use of mathematics concepts may try to deal with social phenomenon and context (Camerer, 1985), but its ability to investigate the context is circumscribed, with the researcher struggling to limit the number of variables to be analysed (Ragin, 1987; Yin, 1984: 23). Because research into strategic differences is concerned with socially-constructed deliberate action which firms can explain, statistical survey research, by its very nature, is not suited to elucidate these. Instead, they can only be revealed by research methods which make the firm's rational response an integral part of study (Wallace, 1993: 107). Furthermore, mathematics modelling that departs from a more objectivist paradigm which assumes variables can be extracted from their context (Burrell and Morgan, 1979), is less likely to explore "holistic explanations" (Pettigrew, 1992: 10) and, in particular, variant relations within and between cases. Because causation in holistic explanation based on sociological strategy research is neither linear nor singular, mathematical models, limited to a few variables and statistical tests constrained by

available data, thus make it impractical to examine the motives or forces which really inspire and govern firms' actions.

On the whole, in contrast to surveys relying on statistical generalisation, case studies rely on analytical theorising (Yin, 1984). The use of case study in the development of theory is a two-sided process, involving "grounding" (Glaser, 1978; Glaser and Strauss, 1967; Rock, 1979; Strauss, 1987) as well as "imagination" (Morgan, 1986). This type of interpretive research approach advocates an inductivist view of theory construction which is more sensitive to exploring the social construction processes which create organisational phenomena (Archer, 1988: 290; Burrell and Morgan, 1979; Mintzberg, 1979; Morgan and Smircich, 1980). In particular, comparative case studies are used in this research to provide the "description and explanation" theory of the "how and why" questions (Whetten, 1989: 491) - how firms draw upon rules and resources in order to respond to social conflicts and why firms respond differently. It calls for a "fine-grained" methodology (Harrigan, 1983: 399) described in social real-life context so that strategic difference or agency can be properly understood in its own terms.

4.3 THE CASE FIRMS: MICROCOMPUTERS

For a doctoral researcher, empirical work starts from a fundamental question: what is the research site that will suit best? This is not as simple a question as it seems. The selection of research sites involves issues from personal interests, academic relevance, data availability and explicit network building to gain access to research sites (Pettigrew, 1990: 274).

With respect to these issues, first and foremost, this research has its roots in my personal background as a "Taiwanese" who will lecture on a "Strategic Management"

course at one of Taiwan's universities. In terms of academic reasons, since the nation-state of Taiwan has proved important to explaining firms' behaviour (Whitley, 1992a), the country is selected as a research site serving to integrate the crucial sets of social structures. In Whitley's (1992c: 37) term the nation state is "the dominant collectivity for organising so many institutions which impinge directly on economic activities, such as legal, education and financial systems...". In addition, studying firm-society relationships in a relatively small country - Taiwan, R.O.C.- helps to make the development and provision of such a multi-level perspective in a single study a quite feasible proposition (Leavy, 1991).

Once the research site of Taiwan was decided, the target industry of microcomputers was selected to reflect a variety of concerns. First, given a focus on a within-sector comparison of firms' behaviour, I needed an industry that has a reasonable number of firms. Secondly, in order to provide as rigorous a test of discretionary firm differences as possible, I needed an industry that is not dominated by monopolistic or oligopolistic concerns. Thirdly, given a focus on state-firms relations, I needed an industry in which the state is deeply involved. Finally, I wanted to look beyond how the structure of technology paradigm applied to the structures of policy style and business recipe as a whole. An industry with dynamic technological change thus became the target of the research.

Since the 1980s, the rise of PCs has been one of the biggest transformation in the IT revolution. Therefore, this PC case provides a good opportunity for examining how PC technology paradigm is structured and how this paradigm is interacted with the other two social structures. In Taiwan's case, the PC industry is a highly fragmented industry which has about 250 firms manufacturing PC integrated systems. Therefore, this industry provides a good opportunity for examining and contrasting strategic differences across firms. In 1981, it was listed as one of the 8 strategic industries. Partly as a result, industry and firm actors were in almost constant

communication with state officials, and we are interested in the scope and intensity of these relationships; and, we are also concerned to understand how these interrelations were shaped, and what structural factors constrained and enabled those strategic actions.

The validity problem, involving the selection of only one industry in a local society, is justified in the nature of the subject-matter itself. On this point, Leavy (1991: 203) notes that the generic value for descriptive and explanatory theory developed from an incident depends upon whether it is the phenomenon itself which is of interest or the particular example being chosen for study. Ragin (1992: 8-11) further makes this clearer, arguing that for a case understood as a specific phenomenon, it can be conceived as an empirical unit or as a theoretical construct. If the latter informs research design, the researchers are influenced by the interaction between ideas and evidences and this interaction will gradually lead to a progressive refinement of an important subset of theoretical instances. Thus for researchers who approach by this way, "constructing cases does not entail determining their empirical limits,...but rather pinpointing and then demonstrating their theoretical significance" (Ragin, 1992: 10). For example, the study of Allison (1971) provides a classic illustration (Ansoff, 1987: 510). The Cuban Missile Crisis was a unique historical episode, but Allison chose it for intensive study in order to gain fresh insight into a more generic process, the process of decision-making in a complex socio-political context. The Allison study has been one of the most influential in decision-making literature, and the insights generated from this single case have been widely referred to by subsequent theorists using more extensive research designs.

With regard to case samples, Ragin (1988) suggests a small number of cases should be good to stick with in achieving careful comparison. Specifically, Eisenhardt (1989) gives the reasonable number of cases chosen on a range of four to ten in terms of researching availability and comparative degree. Likewise, Pettigrew's (1990: 276)

methodological position on studying strategic change rests upon between four to six cases with the possibility of some flexibility in these. For this research, as a result of a set of deliberate considerations and practical experience, nine PC firms were chosen as case study units.

In practice, my access to the nine case studies firms (out of 17 firms contacted) can be addressed in two stages.

First, the leading 17 firms of the Taiwanese PC industry were contacted by a letter of enquiry, written in English (with the logo of Warwick Business School) individually in early 1993 when I was doing my course study at Warwick. These letters were all addressed to the chief executive by name and briefly explained the purpose and methods of the research and asked for their co-operation. Also, summaries of the eventual research results were promised to participants (see Appendix 1). Out of these 17 letters, only two firms responded - one (Tatung) rejected and the other (Twinhead) accepted. Then, after I returned to Taiwan, I came to know that four out the remaining 15 firms (Acer, Mitac, FIC and Compal) had listed their stocks on the exchange market and therefore were obliged to release news to the public. Meanwhile, they all set up public relations (P.R.) divisions to deal with communications matters such as our interests. On the suggestions of P.R. staffs, the researcher should therefore contact whomever he is interested to interview. This is more realistic than to ask for co-operation from the chief executives on the grounds that the firms are unlikely to grant the researchers a "go-ahead" on the field sites. Taking the suggestion of Buchanan et al (1988: 53-5), the practice of field research is the art of the possible. Therefore, an "opportunistic" approach to fieldwork in organisations is permissible as it is necessary to exploit the opportunities available. So I included the four firms as case study units since I believed data gathering (including necessary interviews) was no longer a problem.

On the other hand, the remaining 11 firms were contacted again by an introductory letter, with the logo of Warwick Business School, addressed to the chief executives. This time, however, these were all hand-written in Chinese and they were all under the recommendations of the General Secretary for the TCA (Taipei Computer Association) and Director for MIC, III. The letters were followed up three or four days later by a telephone call to explain my research purpose. From this contact, four out of 11 firms agreed to assist.

A total of thirty-three face-to-face interviews was carried out during May to July, 1993; and a further eighteen interviews were conducted during January to February, 1994. I also attended a one-day seminar of "Information Development and Market Opportunities in the East/Pacific Region", held by MIC, III; a three-day conference of "Computer Technology 1993", provided by ITRI; as well as five computer exhibitions (twice a year) held by trade associations. In addition, I attended six speeches held by the TCA. Two of the six were addressed by the chairmen of my case firms - Acer and Elitegroup. Considering the difficulty of gaining access to key personnel of the case firms, I had no choice but to use these opportunities to ask questions. Over all, a total of 51 formal interviews (each averaging 1 hour) had been done by the end of February, 1994; together with numerous occasions to discuss with senior managers, industrial experts and state officials. There were also numerous follow-ups by telephone for clarification, elaboration upon interview discussions or supporting material. I have listed the details of these interviews in Appendix 2 of this thesis.

4.4 DATA GATHERING

4.4.1 Multiple Sources of Data Collection Design

Empirical research in strategic management depends heavily on the creative use of multiple sources of information (Jick, 1979; Pettigrew, 1990; Snow and Hambrick, 1980). Given this, my approach to data collection was to strive to combine, as best I could, some of the methods and perspective of the organisational analyst with those of the business historian and cultural anthropologist (Pettigrew, 1985; Spender, 1989). Data were collected primarily through field personal interviews, published annual reports, contemporary press information and a variety of other archival materials (Harrigan, 1983). Data collection from all these sources was continued until I was able to contrast strategic differences across the nine case study firms with a comprehensive description and to explicate the social identities or forces behind these differences (cf. Glaser and Strauss, 1967; Eisenhardt and Bourgeois, 1988: 739-740).

Field interviews and archival searches were designed to provide richness in understanding a particular firm's strategy, as well as understanding variances from those of others. The collection of interview and archival data was interleaved, rather than carried out at separate points in time, and they complemented each other in a number of valuable ways. Interviews led to the unearthing of more archival data, which in turn led to some fresh lines of inquiry for further interviews. Interview data unavailable from other sources would provide valuable insights into the intentions and strategic behaviours of key actors and valuable interpretations of key events, and what they meant to the major participants. Enquiries into how firms coped with similar problems could establish firms' social identities on a common base date, and compare their subsequent strategic choices up to a common future point.

Archival data were used to help establish proper chronologies where recollections were doubtful, and this data could also provide good evidence of the actual outcomes of each process, such as financial performance. Secondary sources also could supplement and verify data gathered in field interviews. The importance of published material has been suggested in studying firms' past strategies. As Pettigrew (1992) notes, understanding the sequence and flow of events over time is important for scholars of the strategic process. This search is to "catch reality in flight" (Pettigrew, 1992: 11). Therefore, in addition to each firm's financial statements, comparisons of how various firms in the same industry responded to strategic issues could be established by searching company annual reports, news media and trade journal coverage of key events.

4.4.2 Document Data Source and Availability

Secondary documents were collected mainly through libraries and from informants in the field (see Appendix 3). However, the fact that the Taiwanese capital market was little computerised made it difficult to trace the earlier financial statements of my case firms. Instead, only the past five years' records can be found in companies' annual reports. The researcher had asked certain interviewees to provide the companies' earlier financial figures, but they were more or less reluctant to deal with this request as it was too laborious to carry out. Thus, only the past five years' critical financial records (turnover, profit margin, and R.O.E.) for case firms are presented in Appendix 4.

4.4.3 Personal Interview issues

In many ways the pivotal link in the whole data collection process is the personal contact and interviews with key individuals, both within or associated with the organisations and institutions under this study. How these contacts are established

and developed are important elements in the whole process of empirical investigation. Indeed, for this research, once a particular industry and firm is chosen, one important question then is to determine how should such industry or firm's dominant actors be identified and how many interviews are enough. This is a question of validity (Dane, 1990: 34, 148-9).

In practice, strategic management can be studied at different levels, with Grant (1988: 6) identifying at least a hierarchy of four levels - collective, corporate, business and functional analysis. At the level of collective or corporate analysis, one tends to regard strategy as the organisational character (Venkatraman & Grant, 1986), by which managers and scholars often discuss strategy in such organisations. This tendency, in turn, implies the rejection of methodological individualism. As Giddens (1984: 220) alleges, methodological individualists such as Popper "are wrong in so far as they claim that social categories can be reduced to descriptions in terms of individual predicates" (cf. Giddens, 1979: 94-5). Corporate strategy in this sense can be regarded as an organisational level construct that has characteristics distinct from those of the individuals who constitute the organisation. In other words, as there exists a fundamental distinction between a class unit and the individual members, corporate strategy should be treated in terms of being different from constructs, such as locus of control of managers and leadership styles viewed at an individual level of analysis.

The above distinction then implies a further question, raised by the debate over data collection - that is, how can responses from a single manager be treated as valid representations of the collective phenomenon? Even senior managers cannot be relied on to know and control everything. Additionally, power within collectives does not correlate in an orderly fashion with hierarchical position. To overcome these limitations, some strategy quantitative researchers collect data from multiple managers within an organisational unit. By treating individual managers as random subjects, a

statistical mode (analysis of variance) of all responses is calculated and then an aggregated organisational value is obtained to provide sufficient justifications.

In using the comparative case studies method to examine corporate strategy, the work of interviewing differs considerably from that associated with quantitative skills. Whereas the latter tend to be normalised and standardised, qualitative case research interviews are not guided by a pre-existing structured scheme. Here in this research, contrary to statistic skills in normalising strategy constructs, I proceeded with a series of grounded enquiries to identify dominant actors' behaviours within each of my case study collectives. In this way, the number of interviews conducted is determined by Glaser and Strauss's (1967) concept of "theoretical saturation", that is, I stopped interviewing additional informants when I was getting quite repetitive answers that did not dig any deeper. In addition, given the limited access to the field itself, I was also flexible in collecting primary empirical data on the use of inter-actors' confirmation. As a consequence, during the grounded process, I had conducted more than fifty face-to-face interviews and numerous casual conversations with senior managers and industry experts (over conferences, on factory tours and exhibition visits, etc.), in order to both confirm strategic choices of my nine case firms and contrast their strategic differences.

The face-to-face interviews were conducted broadly according to the principles of the "focused interview" as developed by Merton and Kendall (1946). The focused interview combines unstructured interviews with a loose pattern of agreement with the interviewee about the context of inquiry. Interview guides were prepared before each interview according to the stage of the research and the position of the subject. These guides would only specify areas of interest and leave the interviewer free to follow subjects' lines of thought. In this sense, the interviews have what Merton and Kendal (1946) call "range", permitting the subjects themselves to raise unanticipated areas of concern. The interviews also have "specificity", that is, they encourage subjects to

express fully their own definitions of situations and actions. Importantly, "depth" is also sought, in order to maximise self-revelatory comments concerning how the stimulus materials are experienced (Merton and Kendal, 1946: 555; cf. Whittington, 1989: 127; Spender, 1989: 79).

Most interviews were taped so that the interviewer could feel free to concentrate on the subject. These tapes were later transcribed verbatim for analysis. In fact, it is generally acknowledged by academics that studying Taiwanese company behaviour through the use of personal interviews is a challenge as most managers will tell you only part of the story and are unlikely to review crises and to talk about critically specific strategic triumphs in detail. Instead, it is possible for managers to tell other people's stories, or for former employees to disclose information of companies they had worked for. In recognition of all these conditions, I was flexible in the content of discussions among my interviewees in attempting to identify accurately firms' behaviours within each of my case studies firms. For example, the choice of journalists as important interviewees is coherent with the grounded theory approach because they provide a balanced account of company strategy and cover a wide range of related phenomena and inside information important to understanding corporate strategic differences across firms on the basis of very different social structures.

4.5 CONCLUSION

In this chapter I have noted that the basic methodology used for this research is that of structurationist comparative case studies. First of all, I elaborated on the distance between structuration theory and empirical research in order to incorporate Giddensian concepts into sociological strategy research. Since the use of structuration theory at a methodological level does not rule-out the quantitative approach (Riley, 1983: 416), I then argued comparative case studies should be used for examining the

strategic diversity of individual firms in terms of my three social structures. The remaining sections of this chapter covered various practical matters, such as selecting the samples, collecting secondary documents, and setting up, conducting and analysing interviews. While based on my empirical investigation, the next four chapters then will try to show how the four conceptual categories - social structures, industry system, corporate identities and strategic choices - can be integrated into a framework, capable of explaining corporate strategic differences.

CHAPTER FIVE: SOCIAL STRUCTURES

5.1 INTRODUCTION

In this chapter I start to deal with the concrete empirical setting of the Taiwanese PC industry. The last four chapters have established a tripartite structural theory of strategy in order to study the industry from which the nine case study firms are drawn. Informed by structurationist sociology, the theory suggests that strategy is channelled through social structures. The social structures refer to institutionalised patterns "in how people behave and in the relationships in which they stand with one another" (Giddens, 1989: 19). In Chapter 3 I have identified three sets of social structures critical to explaining strategic choices and differences in general. These are policy style, business recipe and technology paradigm. The policy style is made up of two features. One is the ways in which state institutions operate in the process of economic development, the other is the relationships between the state and business (cf. Richardson et al, 1982; Whitley, 1992a: 119-65). The business recipe refers to the ways in which firms function as economic actors, and to the relationships both between firms in the nation state and between owners, managers and workers within the organisations (Whitley, 1992a, e). The technology paradigm is the institutionalised knowledge base of an industry which includes the ways in which industrial operators behave in the industry and the relationships in which suppliers, distributors, customers and other business partners associate one with another within the industry (cf. Dosi, 1984; Jones and Womack, 1986). Thus, the policy style, business recipe and technology paradigm have much in common. They all concern the ways in which social actors behave and develop relationships with one another. These ways constitute institutionalised patterns which can be analysed as rules of conduct and resources available for action.

Rules offer firms a set of guides to act, and resources empower firms' actions. The extent to which firms depend on the three sets of social rules and resources to guide and empower their actions varies one with another, as firms' links to the structures differ from one another. These links constitute firms' identities that will connect strategic choices to social structures in a certain way. It is therefore important to examine the criteria used to examine the degree to which firms have developed different structural links with their attendant social structures.

To summarise, there are two elements - actions and relationships - that constitute the social structures of policy style, business recipe and technology paradigm. These structures provide both social rules and resources for guiding and empower firms' action. Also, the structures provide specific criteria by which we can examine firms' links to the social rules and resources. All of these elements are summarised in Table 5.1, and will be used to drive my analysis of the three social structures in this chapter.

Table 5.1 Social structures

	Policy style	Business recipe	Technology paradigm
Actions	State	Firms	Industrial Operators
Relationships	State-business relations	i) Inter-firm relations (within a nation state); ii) internal authority	Exchange relations within an industry
Rules	Policy rules	Business rules	Technology rules
Resources	Policy resources	Business resources	Technology resources
Firms' links to social structures	Identification with the style	Identification with the recipe	Identification with the paradigm

Informed by Table 5.1, this chapter will take three parts. First, I will introduce the Taiwanese policy style. Second, I will discuss the Taiwanese business recipe. Finally, I will examine the PC technology paradigm. Beginning in each section, I will use "actions and relationships" to carry out my analysis of the three social structures. Next, I will turn to examine in detail the social rules and resources generated from my discussion of each social structure. That done, I will briefly examine some criteria that will be used to examine firms' links to each of the social structures. First, however, I want to outline a table summarising the whole contents of this chapter so that I can integrate it into the subsequent empirical analysis. It is in this table that I shall demonstrate the possibility of conflict, discussed in the next chapter. In general, Table 5.2 will be systematically elaborated as I discuss each of the three social structures.

Table 5.2 Taiwanese policy style, Taiwanese business recipe and PC technology paradigm

Policy rules	Policy resources	Identification with the style
<i>One KMT party-state:</i> authoritarian-corporatist, developmental state; respect for I.P.R.; technology venture and high R&D commitment; national-champion branding; internationalisation, but not in China	Legitimate coercion; Cheap land, labour and capital; bank loans, government subsidies; the stockmarket; the HSIP; state contracts and the KMT business group; social prestige and publicly free advertisement	Connection to the KMT (esp. the chairman); Good, high education degrees (esp. those of the US); connection to the KMT business group; Stock-exchange listing; Taiwanese ethnicity
Business rules	Business resources	Identification with the recipe
Strong family control; low levels of vertical integration and high levels of opportunistic diversification; volume expansion, cost leadership and OEMs; pluralistic, opportunistic, personal exchange relationships; opportunistic external acquisition of expertise	Capital ownership; paternalism, entrepreneurship and trustworthy family managers; networks, satellite manufacturing system, trading agents and curb markets; industry externalities; hard-working employees	A highly familial top management; business- groups firms vs. single form of family business; personal relations of owner-managers; Taiwanese or American higher degrees of owner- managers
Technology rules	Technology resources	Identification with the paradigm
Open systems or standards; continual growth; outsourcing; standardised design and cheap production; rapid product change and strategic alliances; respect for I.P.R.; non-integration into distribution; flexibility and entrepreneurship	Network externalities; access to technological leaders (e.g. Intel, and Microsoft and Japanese LCD suppliers); access to US distributors; business contracts and innovation partnerships; highly skilled engineering labour	US degrees (esp. in Engineering and/or California's universities); Contracting or investment linkages; Long-standing component supply

5.2 TAIWANESE POLICY STYLE

In devising a typology of policy style, Richardson et al (1982) indicate two primary features. The first feature refers to a government's approach to problem-solving. The second primary feature refers to the relationships between government and other actors in the policy process. It is evident that Richardson et al's conception of policy style is at a relatively high level of abstraction and that this conception can be used at different levels or in different social areas (Mazey and Richardson, 1992; Raab, 1992; Smith, 1992). Relatedly, in considering the major proximate social institutions which are closely related to the Taiwanese business recipe, Whitley (1992a) suggests that the organisation and role of the state are critical. This suggestion adds to my use of Richardson et al's notion of policy style which needs to take into consideration "the role of the state in the economic development..., how state institutions developed in the course of industrialisation and how particular state-business relations became established" (Whitley, 1992a: 119). Accordingly, I extend Richardson et al's (1982) notion of policy style to embrace Whitley's (1992a: 119-65) discussion of political systems and state-business relations. As a result, I will use two aspects of policy style to structure my analysis. One aspect of policy style concerns the development and role of state institutions in the process of economic development. The second aspect concerns the state's relationships with firms in this process. Taken together, the two aspects will provide the framework of my following analysis of the Taiwanese policy style.

5.2.1 The Role of the State and State-Business Relations

Economic development during the past four decades has substantially changed various authority patterns in Taiwan's society. But the structure and role of the Taiwanese state and its absolute authority to direct the path of economic development have been relatively extended and continuous (Gold, 1986; Wade, 1990; Whitley,

1992a: 133-42; Winckler, 1992). Consequently, Taiwan possesses a relatively stable, higher-order *authoritarian-corporatist* rule (Winckler, 1984, 1992; Chu, 1987; Johnson, 1987; Wade, 1990: 228; Zeigler, 1988) that underpins its commitment to state-led industrialisation and state-business relations. In considering the significance of the state in structuring firm behaviour, this authoritarian-corporatist rule pinpoints an important element of continuity, depending greatly on the regime of the Kuomintang or the Nationalist party (hereafter KMT)¹ whose military force and economic elites are a source of stability and growth in the country (Whitley, 1992a: 134-6). Despite the increasingly active role of the opposition², the ruling KMT remains in solid control through a mixture of reform, co-optation and suppression. In a sense, *one KMT party-state rule* prevails in the system of state institutions and governs the channelling of policy style resources from the state to industry and business organisations.

Under the influence of one party-state rule, the KMT party-state has dominated the bureaucracy, and has enjoyed unusual power to carry out sustained programmes in the course of economic development. The state has sustained its economic position through extension of state ownership and control of industry, bank and financial systems (Wade, 1990: 159-62, 175-82; Whitley, 1992a: 153-5). The movement of organised labour was tightly under the repression and control of the state (Zeigler, 1988: 164-72; cf. Bello and Rosenfeld, 1990: 215-30; Fields, 1992: 405-20). The combination of strong state commitment to economic growth and a less autonomous civil society has led the wide configuration of social classes to encourage industrial development and investment. Overall, in considering the role of the Taiwanese state in industry, we can see that it functions as a *developmental state* which adopts a highly elaborate, resourceful and centralised administrative apparatus for planning and managing national resource distribution over the process of industrialisation (Chu, 1989: 654-6).

¹For further discussions of the KMT background, see Moody (1992: 16-20).

²For the development of political oppositions, see Lu (1992).

Acting as a development state, the Taiwanese state "governed the market" (Wade, 1990). This involved initiating and co-ordinating economic policies, helping to ensure that resources went into industries important for future growth. Indeed, according to neo-mercantile interpretation of the NICs (Cumings, 1987; Moon, 1990: 156-7), Taiwan was regarded as the technological free-rider basing its economic expansion on selected manufactured goods (cf. Chou, 1991). However, through the long outward-oriented period, state influence was focused on the upstream large-scale firms, leaving the downstream small-scale firms much freer (Wade, 1990: 73). Mostly state-owned, the upstream firms enabled the state to have direct control over strategic material and provided economic safety for the loyal mainlander followers (Amsden, 1985: 92). Partly to prevent the concentration of local economic power and partly because of the ethnic conflict separating the ruling party from the private sector, the state largely avoided the policy of backing conglomerates. Relatedly, with access to the high saving rate of the local economy, the curb financial institutions have enabled small and medium firms to achieve their export success despite state resources mostly favouring home-oriented large firms (Wade, 1985: 107-11). This loose, non-interference style of industry policy planning had left the export economy in Taiwan free to work out its own patterns (Hamilton and Biggart, 1988: 580). Under this circumstance, Taiwan's export-oriented firms were more independent and autonomous, but equally had to bear enterprise risks and uncertainty. As Gold (1986: 126) explains it,

"Government-business relations in Taiwan differed substantially from Japan and Korea...in Taiwan planners retained an aloof posture. They met to formulate policy and then relayed their decisions and attendant mechanisms to implement it to the business community and watched what happened. Although cadres did meet with entrepreneurs to exert some pressure and pick some favourites, Taiwan's private sector has been much more anarchic and self-directed than its Japanese and Korean counterparts."

This kind of state-business relations traditionally militated against the emergence of favourite groups or national champions in the international economy, as state elites retained significant independence from business in the formulation of public policy (Chu, 1989: 666-7; Haggard, 1988: 264; Hamilton and Biggart, 1988: 580; Wade, 1990: 256). But the relations have changed significantly since the mid-1980s, just as the development of state institutions has. The impetus for change was enforced by the lifting of martial law, the death of President Chiang Ching-kuo, the restructuring of parliament and the rise of *Taiwanisation* in the party-state (Cheng and Haggard, 1992; *Economist*, 4 Dec. 1993: 81; Long, 1991: 180-202; Moody, 1992). The rise of capitalism in mainland China exacerbated this change and reinforced the willingness of private business elites to invest in China in defiance of the state (Chu, 1992: 152-3).

In particular, on the side of the state, since the mid-1980s when *Taiwanisation* has restructured the system of state institutions, together with the increasingly apparent desire of the state to establish its international legitimacy (Clark, 1993: 126; Hu, 1994: 3-24), there has been a more pragmatic and aggressive industrial policy under President Lee Teng-hui and Premier Lien Chan. Both have concentrated on promoting native businesses as the means of both justifying the Taiwanese controlled regime and promoting international respectability. This recent change in the state attitudes towards the management of national champions has substantially restructured state-business relations in Taiwan, and so has differentiated the legitimate process of competition for access to state resources. In addition to this policy change, the political power of firms has increased, in so far as private business elites seek to expand their economic power into political activities while challenging the supremacy of the state in the process of economic development. Partly because the rise of *Taiwanisation* has reversed the allocation of political resources in the state and partly because the restructuring of the election system has made the expansion of interest groups more possible, the business community has begun to be accorded a more preeminent recognition in the party power structure. To illustrate, for the first time, two members of CSC - the highest

power body of the KMT - are businessmen. The combination of the increased political power of firms and the increased desire of the state to support national champions has facilitated the willingness of private business elites to enter into the political pursuit of competitive advantage.

Overall, then, Taiwanese firms now have a tendency towards competition for access to political advantages because the distribution of state resources can be different for individual firms. This change of state-business relations has reinforced firms' tendency to conform to policy rules of the state as the competition for access to state resources can be brought down to the level of individual firms, and has become more important to firms. These policy rules, which are particularly critical to explaining strategic choices of Taiwanese PC firms, will now be discussed.

5.2.2 Policy Style Rules

Respect for I.P.R.

In considering the Taiwanese policy style for guiding firms' action, a number of important rules deserve special mention. The first one is the rule of respect for I.P.R. (Intellectual Property Rights). In fact, the state's concentration upon international relations within the world has influenced the R&D practices of many private business elites since the late 1980s. As the pace of joining international organisations such as GATT (General Agreement on Tariffs and Trade) (Feinerman, 1994) accelerates, state restrictions on counterfeiting have become much more considerable. Indeed, as one of the worst offenders of intellectual-property rights partly because of its traditionally weak legal protection, Taiwan is being made into an example for Washington's world-wide war against I.P.R. theft (Baum, 8 April 1993). In its I.P.R. negotiation with the U.S., however, Taiwan is vulnerable because of its diplomatic isolation and its pending application to join the GATT. Partly as a result, since the late 1980s, the state has

created many pressures on firms' counterfeiting and other illegal practices. To illustrate, currently, Taiwanese PC firms pay half of their earnings to foreign firms for patent expenditures³ and numerous I.P.R. legal cases are in process (Ristelhueber, Sep. 1993; Soong and Kovar, 1 Sep. 1993). Overall, in competition with one another for access to state resources, private business elites need to conform to the rule of respect for I.P.R., as this conformity is at the least supportive of their pursuit of political resources.

Technology Venture and High R&D Commitment

Before the late 1970s, in order to improve the competitiveness of industry, the state in Taiwan tended to concentrate on controlling factor costs and the exchange rate through intervention in factor and currency markets. The focus was on improving the general framework for business. Since then, state support of technology venture and firms' commitment to R&D activities has intensified, in so far as the state makes a priority of upgrading industrial technology in selected industries and firms.

In May 1978, a new "Science and Technology Development Plan" was formulated and passed by the Executive Yuan. While primarily designed to spur industry's own efforts, this plan laid out a programme that entailed greater investment in R&D, education, industrial restructuring and improved linkages between defence and civilian industries in high-technology fields. Since then, state support of industry specialisation and modernisation has become more distinctive, as the state promotes the activities of technology venture, inter-firm cooperation and high R&D commitment. For instance, in order to intensify its efforts towards upgrading industry technology, in the late 1990, the state promulgated the Statute for Promotion and Upgrading of Industries (SPUI) to replace the Statute for Encouraging Investment

³Quoted from a speech by Tze-chen Tu, Director of MIC, III.

(SEI), which was enacted for thirty years between 1961 and 1990 (Wade, 1990: 182-5).

According to SPUI, fiscal incentives are used to help promote activities of manufacturing automation, technology ventures, pollution control and international marketing (Hobgood-Brown and Clinton, 1994: 193-5; Huang, 1994: 493-500). In late 1992, the Program for the Development of Critical Components and Products (DCCP) was further declared by the state to encourage long-term commitments to R&D. In contrast to the SEI which aims to build up the manufacturing sector, the newly announced SPUI and DCCP seem to focus on promoting the elevation of manufacturing ability to the level of innovation potential. The SPUI and DCCP have been distinctive in their emphasis on modernisation of equipment and specialisation between firms within the same industry, leading to intense industrial reorganisation, technology ventures and the promotion of research and development projects and own-brand marketing (Hobgood-Brown and Clinton, 1994: 193). In this, own-brand marketing is worth singling out for further discussion.

National-champion Branding

As discussed above, the state is increasingly promoting own-brand marketing. Traditionally, this pursuit of international marketing has been deliberately neglected by Taiwanese firms, as several factors constrain the willingness of business owners to market their own products in the international economy. For example, Taiwan's traditional political isolation has long constrained firms' activities in the world. The MIT (made in Taiwan) products have been for a long time been cheaper imitation with their prices regularly implying "30 percent off"⁴. However, in order to underpin its efforts towards international recognition, the state has been highly involved in directing

⁴Quoted from a speech by Stan Shih, CEO of Acer.

the flow of company resources into international marketing, particularly through state encouragement of national champions.

Partly because of the increased desire of the state to encourage international marketing, there are now some Taiwanese firms (e.g. Acer in PCs, Kennex in tennis rackets and Proton in TVs) which are pursuing more the own-brand route. To achieve sustainable international advantage, most of these firms have a tendency to secure the support of the state. This tendency has, of course, exacerbated the competition between firms for access to political advantage. In the nation state, some firms may be recognised as national champions and so are more likely to depend on the policy style to guide and empower their action.

Internationalisation, but not in China

Just as the creation of national-champion brands is critical to underpinning its search for international recognition, the state is increasingly encouraging the internationalisation of corporate activities. This is also encouraged by the large-scale currency appreciation and rising wages that have forced many firms to move manufacturing operations offshore to neighbouring Pacific Rim countries, where less-expensive labour and land are still available. With growing policy concern regarding the importation of foreign labour as an alternative source of cheap labour, the combination of political uncertainty and geographical isolation has led the government to limit the import of labour within strict yearly quotas. Foreign direct investment overseas, then, is left as the most obvious means to accessing cheap labour by Taiwanese firms.

Obviously, Taiwan's political isolation operates in some ways that constrain firms' internationalisation. Still, some features of policy style are involved in its production of power bases for firms' competition in the international market. Taiwan's

long dependence on the US, for example, provides firms with a familiar English-speaking community that steers their international activities. In addition, Taiwan's good relationships with the overseas Chinese (Long, 1991: 150-1) enable firms to invest in south-eastern ^{Asian} countries. In a sense, the rationale of internationalisation is thus partly associated with the English language and south-eastern countries. On the other hand, this rationale is certainly not supportive of investing in China.

As a purely economic matter, the mainland China, with its common language and certain other cultural traits, as well as its investment incentives, has offered Taiwanese firms a natural outlet (Zich, 1993: 24-6). However, indirect trade with the mainland prior to 1988 had been traditionally viewed under a long-standing statute on Taiwan as a seditious act, equivalent to financially aiding Chinese Communism. However, social movements in Taiwan since 1988 have changed the relationships between the state and firms in the area of China investment policy. The tug-of-war between the state and the export-oriented sectors illustrates how business people were leading, rather than being led by, Taiwan's policy makers. In general, China investment is an area where the individualistic interest of economic actors and the security interests of the state clash. The state has resisted the persistent call from the private export-oriented sector to loosen the restrictions on economic exchange between Taiwan and mainland China (Chu, 1992: 152-3). None the less, since the mid-1980s, local firms have begun to find ways to circumvent the existing legal barriers. The trickle of the triangular trade through Hong Kong soon turned into a torrent. The state was later forced to modify its policy to accommodate the "existing situation". The ban on indirect trade concerning exports to the mainland was lifted, with the restrictions on imports substantially eased in 1989. In 1990, the state also formally eased the ban on investment through overseas subsidiaries. In considering the styles of Taiwan's Chinese investment policy, we thus observe that the evolving relationships between the state and business have been a series of confrontations and practical actions.

Overall, then, because of its reduced autonomy and implementation capacity, the state has been losing its control over private business elites who are eager to go to China for obvious reasons. Nevertheless, a key weapon in the state's ability to govern the private sector is its control over financial system and stockmarket institution. In detail, banking loans are reduced for firms which have operational activities in China. The regulations concerning Chinese investment have been especially strict for the handful of publicly listed companies. Accordingly, the floated companies may be able to get access to local public capital resources, but their identities as PLCs in turn considerably associate them with the state and so constrain their access to China's cheap natural resources.

5.2.3 Policy Style Resources

Legitimate Coercion

In Taiwan, state-business relations are partly based on the role of the KMT party-state to legitimate the state system of rule. At a fundamental level, business activities in the nation state are thus subject to the approval of the KMT party-state. In considering a variety of policy style resources for empowering firms' action, the basic one then is "control over the means of violence" (Giddens, 1985; cf. Whittington, 1992: 704-5).

Cheap Land, Labour and Capital

In addition to legitimate coercion, the state offers firms a society with high mercantilist sentiment among the populace by controlling the movements of other social classes (cf. Koo, 1987: 177). Operating in such a society, Taiwan firms have enjoyed privileged positions in the allocation of national natural resources - land, labour and capital - and have for decades been blessed with a national consensus about

the importance of economic growth. To illustrate, in the process of industrialisation, economic growth was always given advantage over environment protection (Hsiao, 1992: 60). Strikes, which were banned under martial law, continue to be illegal despite some revision of the Labour Dispute Law (Cohen, 1988: 129). The price of industry-use electricity is much cheaper than that for family-use. The Fair Trade Law (FTL) was not enacted until early 1991⁵. In comparison with natural sciences, agriculture and social sciences, engineering remains a focal point of the government's education investment (NSC, 1993). In order to help industries in export expansion, the state has developed a closely regulated system of floating exchange rates in which the NT dollar was always under-valued. Overall, Taiwanese firms benefit from a policy style which has firmly established a sophisticated infrastructure, favourable to creating economic resources, including cheap land, labour and capital.

In addition to this general framework, the state has directed the flow of financial resources into particular areas and provided various kinds of discriminated assistance in industry. In general, the assistance includes access to bank loans, subsidies, the stockmarket, the HSIP and the KMT business group. These resources will be discussed below.

Bank loans and Government Subsidies

In Taiwan, the channeling of national high saving through state-controlled financial systems has been a key instrument of industrial management. The financial systems are virtually dominated by the banks (Wade, 1985: 112), the majority of which are directly and indirectly controlled by the state and are extremely conservative. Until recently, the banking sector is very bureaucratic, insisting on conformity to state policy (Hou Liang and Skully, 1982; Wade, 1985). In a sense, any bank loan in Taiwan is

⁵The FTL covers a wide range of market practices and targets unfair competition practices (*East Asian Executive Reports*, 15 Mar. 1991).

preferential because the alternative is curb market credit at a price at least 50 percent higher (Wade, 1990: 165).

By indicating priority industries or products for bank lending, the state is able to impose its wishes on the private sector. In order to promote R&D activities, for example, the state announced a list of 145 strategic products that qualified for a preferential loan (which was to be two percent lower than that of the regular long-term loan) in 1985, covering 49 machine industry products, 9 auto parts, 29 electrical products and 58 products in the information industry. In 1986, the number of strategic products was extended to contain 198 further items including materials, pharmaceutical products, and computer software, as falling under the strategic industries.

In addition to bank loans, the state has created special purpose funds, such as the Development Fund of the Executive Yuan, together with other fiscal incentives to assist the development of industry. These incentives include devices such as tax holidays, accelerated depreciation, investment tax credits, duty-free import of capital goods, and reduced rates of business tax (Wade, 1990: 182-5). In order to encourage investments in the information industry, for example, the state appointed the Bank of Taiwan and Medium Business Bank of Taiwan to offer low-interest loans to information companies. During the 1982-1989 period, there were 363 cases in which information and electronics companies obtained a total of NT\$22.8 billion in bank loans through the state's assistance, accounting for 22.4 per cent of the total loans for strategic industries (III, 1990: 2).

The Stockmarket

Apart from the banking sector and special purpose funds, the Taiwan stockmarket since the late 1987 has been increasingly important to firms seeking long-

term equity sources. The Taiwan Stock Exchange (TSE), the only centralised securities trading market in Taiwan, was open for business in 1962, and has become a major capital institution since the mid-1980s. The weakness of Taiwan's money market and other capital market institutions, together with the rapid accumulation of foreign exchange reserves and national savings, has fostered the TSE's development (Lai, 1994).

Comparison between the years 1986 and 1990 illustrates the significance of TSE. In 1986, the weighted average index for the first time reached 1,000 points, with an average of 130 million shares traded every day and NT\$2.4 billion in daily trading volume. In February 1990, the index reached an all-time high, soaring to 12,495.34 points, with an average of 993 million shares traded daily and NT \$132.98 billion in daily market turnover, making the TSE one of the busiest markets in the world (*The Yearbook on the Stockmarket of the Republic of China*, 1990: 223). It is estimated that one-fifth of Taiwan's population engages in the trading of stocks (Yu, 1992: 3). This rapidly growing stockmarket capitalisation has played an important role in helping PLCs raise cheap capital through public funding. The TSE is virtually state-controlled, with its company shares mostly owned by state-operated financial institutions and the KMT business group. Partly through public regulations and partly through the influence of the KMT business group, the KMT is able to reinforce its ability to govern private business elites which are fuelled by a "floating dream". In order to encourage firms' conformity to the state's promotion of industrial upgrading and reorganisation, for example, the state stipulates two items in the DCCP (the Program for the Development of Critical Components and Products) to help increase firms' access to capital resources of the stockmarket. As the DCCP indicates:

.... (2) Where a publicly listed company increases its capital to produce the critical components and products selected pursuant to this program, the Minister of Economic Affairs may recommend the Securities and Exchange Commission, MOF, to approve the company's application for capital increase".

(3) Where a company whose stocks are not listed in the stock exchange house or not traded at the trading floor of securities dealers, the Ministry of Economic Affairs may

recommend the Securities and Exchange Commission, MOF, to agree to list the company's stocks as Class C stocks or approve such stocks to be traded at the trading floor of securities dealers⁶.

To a considerable extent, the MOEA's approval is necessary for firms to become publicly listed, as the board of the TSE is partly incorporated by the MOEA's officials.

Additionally, it is important to note here that, precisely because the competition for access to the stockmarket is very high in industry, stockmarket regulations have often favoured business-group firms or national champions, working against SMEs. According to the practice and regulations of the corporate and security laws, only a company with a paid-up capital equal to NT\$100 million or more could apply for the issuance of shares through public funding and negotiation in the open market. Therefore, only large companies were able to take advantage of the rapid rise in stock prices by raising funds through the issuance of shares. Although strong capital structure is an essential condition for gaining a position in the stockmarket, connection to the KMT appears to be critically useful in winning the competition for access to public capital resources⁷. As this connection can now be differentiated at the level of individual firms, private business elites with good political relations can thus maximise their opportunity in order to raise funds through the stockmarket which is virtually manipulated and controlled by the state.

The HSIP (infrastructure)

As I have discussed, the state has recognised the importance of licensing agreements and direct foreign investment to Taiwan's industrial growth (cf. Pack,

⁶On this point, refers to Article 7, *Program for the Development of Critical Components and Products*, published by MOEA (Dec. 1992).

⁷To take an example, by inviting Dr. Huang to chair the board, Elitegroup became publicly floated on the exchange market in the middle of 1994. Elitegroup is one of my case PC firms, and its new chairman Dr. Huang is believed to have very good relationships with the KMT.

1992: 90). By adopting measures to encourage DFI in more capital and technology-intensive industries, it has actively used its sovereign power and its control of the domestic economy to assist the acquirement of advanced expertise resources (Huang, 1989: 113). Perhaps the most important of such measures was the establishment of the Hsin-chu Science-based Industrial Park (HSIP). In 1980, the state established the HSIP in order to "help attract the services of first-rate Chinese scientists, to establish the introduction of key technologies, to accelerate the development of defence-related industries, and to promote a close working relationship between the academic profession and the industrial sector". The HSIP offers foreign investors a favourable environment for research, development and manufacturing that includes attractive incentives and a well-established infrastructure. For example, the freeway passes directly through the HSIP, offering rapid access to all major destinations. As of December 1991, the state had invested more than US\$312 million in the Park, providing complete public utilities and services as well as industrial and executive districts. This type of knowledge transfer is an important resource in establishing linkages between local research institutes, local businesses and foreign ones in order to help local industries move towards the best business practices in the world. For example, one criterion of entry to the HSIP is that a firm engages in some development and engineering in the Park (Haggard and Cheng, 1987: 127). Gaining access to the HSIP is very competitive for local firms⁸. In addition to accessible expert resources, there are several investment incentives available to firms situated in the HSIP (NSC, 1993). These include a five-year income tax holiday, a maximum income tax liability of 22% following the tax holiday, exemption from tariffs on machinery imports and from business tax on export sales, venture capital assistance and so on.

⁸By 1991, among my nine case PC firms, only Acer, Mitac and Twinhead had operational activities in the HSIP. As we shall see later in my case studies, partly because of their relatively high connections to the policy style, all these three firms tend to commit themselves to R&D activities, .

State Contracts and the KMT Business Group

Partly through its extended control of state institutions, the KMT party-state has been a major buyer in some industries. State procurement has been unusually oriented towards promoting national champions since the late 1980s. For example, nearly all universities and public enterprises purchased PCs made by Acer, the first Taiwanese PC firm achieving international reputation.

The KMT party-state has also been able to associate itself with private business elites through extension of state ownership of enterprises, known as the KMT business group. The group ranges from property development firms and financial institutions to a communications empire and so on. Although much of its investment is categorised as hidden-assets (e.g. mass communication) whose importance is not published, the KMT business group is still ranked as the sixth biggest business group in Taiwan. It owns about 70 major properties and corporations, with a total worth estimated at US\$115 billion. This makes the KMT one of the richest political parties in the world (Burton, 1993). By developing a local business conglomerate under KMT control and ensuring party control of most national material resources, the party has succeeded in stabilizing its political regime and neutralizing a considerable amount of potential opposition. In particular, the group not only helps the KMT state to impose its policy decisions, but also acts as the interest channels from the government to the party itself. The KMT business group has been notable in directing the flow of business contracts and information resources into particular firms which are more willing to conform to the state policy (cf. *Time*, 23 Aug. 1993: 38).

Social Prestige and Publicly Free Advertisement

In addition to substantial fiscal incentives discussed above, some of the important resources provided by the state have been symbolic and informational. Many

awards and ceremonies were created to recognise success in international competition. Own-brand marketing was established as an explicit national honour. The state-controlled media were officially involved, making frequent and free advertisements to promote international own-brand stars (Pennells, 1994). The current president Dr. Lee Teng-hui and premier Dr. Lien Chan were personally engaged, making frequent visits to companies, trade exhibitions and attending most entrepreneurial awarding ceremonies. An example of a notable action to encourage own-brand stars was in the late 1990s when the President Dr. Lee first visited Singapore and he brought an Acer-made PC as a gift for the president of Singapore. As noted, Acer was the first Taiwanese PC firm to market its own-brand, and its founder - Stan Shih - was the first Taiwanese businessman to be recognised as one the world's ten distinguished entrepreneurs by the International Entrepreneur Association (Wang, 1988: 301).

5.2.4 Identification with the Style

As discussed above, political restructuring since the mid 1980s has strongly impinged upon the connections between state agencies and individual firms. Because intervention can now be discriminated at the level of individual firms, some business elites might be viewed as specially legitimate in the nation state, and so are able to gain political advantage over their rivals. To understand the extent to which firms are likely to be able to find legitimation in regard to the nation state and so increase their connections to the state and its resources, the key is to examine the extent to which their identities match the collective political characteristics of the KMT party-state.

Firstly, firms' connection to the KMT chairman associates them with the state in the strongest sense. Regularly acting as a highly centralised party executive in the CSC, the KMT chairman retains a superior position from which he could impose his wishes on the government. In a society where networks of organising relations are considered as a useful resource, connection to the KMT chairman is obviously a

premium one, enabling firms to gain access to a bundle of national economic and political resources. The current President Lee Teng-hui has been chairman since President Chiang Ching-kuo died in January, 1988. Unlike President Chiang Ching-kuo, President Lee Teng-hui's relationships with private business elites are complicated and, indeed, highly involved. For example, in addition to his personal friendships with several business entrepreneurs - such as Jung-fa Chang, the chairman of Evergreen group - the President is also a substantial shareholder of Acer, one of my case PC firms.

Secondly, the education background of owner-managers is critical to connecting firms to the organisation of state agencies who are, indeed, well-educated themselves. In the bureaucracy of the KMT party-state, holding a bachelor degree is common, and most of them hold masters or even doctorate degrees from leading American universities. The degree-oriented virtue of bureaucratic scholarships has been more substantially reflected in the system of state institutions after Lee Teng-hui, who holds a Ph.D. degree in Agricultural Economics of Cornell University⁹, succeeded to the presidency of the ROC and chairmanship of the KMT. In 1993 when President Lee chose Lien Chan as the newly installed premier, the then new cabinet was organised with about half the ministers holding Ph.D. degrees. Thus, owner-managers with American higher education are more able to mix with, understand and exploit the dominant political elite.

Thirdly, firms' connection to the KMT business group will lead them to develop a relatively high tendency to conform to state policy, hence increasing their connection to the Taiwanese policy style. This connection is mainly through cross-equity holding and long-term exchange relationships in the economy. Also, PLCs provide a positive

⁹Dr. Lee went to the US in his early forties to study for a PhD degree. Before that, he had been working in the government apparatus for a long while. President Lee is the first chief of state born in Taiwan and since he has studied also in Japan and was educated during Japan's control over Taiwan, he also can speak fluent Japanese.

connection to the policy style which provides them with cheap capital resources but also constrains them to conform to state policy, particularly that related to the mainland China policy.

In considering business connection to policy style, ethnicity provides a more complicated source of legitimacy. Mainlander ethnicity is still useful in winning material power resources, particularly those relevant to defence-related industries. On the other hand, the rise of *Taiwanisation* in the KMT party-state has led to some sort of demotion of mainlanders' political advantage. Taiwanese community values, in turn, have deeply penetrated the country's political activities. As a result, Taiwanese ethnicity now imposes few constraints, and indeed may offer new advantage to a KMT state struggling for legitimacy in a changing economic environment. Consequently, as native businesses, some Taiwanese firms are increasingly likely to identify with state policy in order to access resources previously directed more to mainlander firms.

5.3 TAIWANESE BUSINESS RECIPE

In this section I examine the second structural concept of my theory - business recipe - that provides a further set of possible rules and resources, enabling firms to act in a certain way. In Section 3.3.2, I propose this concept with reference to the discussion of Whitley (1992a, e) who defines business recipe under three major headings: (1) the nature of firms as economic actors; (2) market organisations; and (3) authoritative coordination and control systems. The nature of firms includes the ways in which decision-making discretion is allocated and exercised and their growth patterns. Market organisations, or inter-firm relations, refer to the significance of long-term connections and obligations between firms, both within and between industrial sectors. The coordination and control systems of firms can be divided into four major characteristics. Those include the significance of personal authority and ownership

within firms, their reliance on impersonal and formal procedures for management, managerial type, and prevalent patterns of employees. These eight categories of Taiwanese business recipe will now be briefly discussed, and will be analysed as specific social rules and resources discussed afterwards.

5.3.1 The Nature of Firms, Market Organisations and Internal Co-ordination Structures

(1) Business Specialisation

To begin with, we discuss the nature of Taiwan firms as economic actors and their development. In Taiwan, firms are predominantly family controlled and operated. These dominant economic actors are known as Chinese family businesses. Most of these family businesses are small and medium-sized enterprises (SMEs)¹⁰. Although their contribution to the Taiwan economy has gradually declined during the past years, the impact of SMEs remains substantial, particularly with respect to exports and employment. These enterprises contribute about one half of the output, and over 57% of exports, and create over 61% of employment opportunities (MOEA, 1992)¹¹. These SMEs are typically highly leveraged (chronically under-financed) in the sense that they depend more on borrowing than on equity capital¹².

¹⁰ The features of SMEs and their scale of operation vary both from country to country and in different industrial cycles over a period of time. For a growing number of researchers and reporting organisations, the small business is generally considered to employ no more than 500 persons and to have sales of less than \$20 million (d'Amboise and Muldowney, 1988: 226). For Taiwan's particular definition with regard to its regulation environment, see *Recognition Standards for Small and Medium-sized Business*, issued by the MOEA on 25 Nov. 1991.

¹¹ For example, Taiwan's PC industry has a large number of SMEs; The top 20 firms account for only 56% of the island's PC production (see Section 6.4).

¹² For example, in 1990, SME sector's liability over asset ratio reached about 70 percent, whilst large businesses' reached about 43 per cent (Bank of Taiwan, 1991).

In addition to SMEs, business groups appear in the economy as another important economic actor¹³. In the early 1970s, successful enterprising and individuals began to form business groups to invest in new companies or one another's firms, rather than to create large business conglomerates. Unlike Korean chaebol firms and Japanese enterprise groups, Taiwanese business groups comprise relatively small companies with only a few hundred workers (Hamilton and Kao, 1990: 140; Orrù et al, 1991). One important reason for Taiwanese business groups lies in the typically paternalistic chairman's desire to let each of his sons be chairman of his own firm (Gold, 1986: 88; Greenhalgh, 1988: 235; Wong, 1985). These groups are owned either by a single family or by several individuals in family partnerships. In Taiwan's economy, this kind of partnership amounts to a form of family ownership (Wong, 1985).

Overall, then, whether in a business group, or a SME, the essence of the Taiwanese firm, or Chinese family business, is familism (Greenhalgh, 1988; Wong, 1985; Hamilton and Kao, 1990: 142). The ownership of the family business is predominantly private, though many of the leading entrepreneurs have diversified large blocks of company shares to different generations to ensure obedience to company and securities regulations and to secure control of the company. Partly as a result, the entire family may be on the payroll. This significance of strong family control, together with the lack of a strong market for corporate control in Taiwan, results in a low degree of managerial discretion (Whitley, 1992a: 65). In considering the significance of owner-control and specialisation, Taiwanese firms are thus considerably specialised in authority hierarchies.

¹³For the definition of East Asian business groups, see Hamilton et al (1989: 107-111). For a fuller discussion of Taiwan business groups, including relevant sources, also see Hamilton and Kao (1990) and Numazaki (1986).

(2) Growth Patterns

The growth patterns of firms are generally discontinuous. In order to take advantage of market opportunities and maximise profits, Taiwanese firms prefer to pursue opportunistic diversification and typically grow through volume expansion into related areas (Whitley, 1992: 65, 204). Partly because family interests are more important than personal prestige, partly because the concentrated ownership structure overrides the function of organisational hierarchy, the opportunistic aspect of entrepreneurism and the goal of profit maximisation are deeply built into the ideology of owner managers.

(3) Relational Contracting; and (4) Inter-sector Coordination

Turning now to consider the organisation of exchange relationships, inter-firm cooperation is scarce in Taiwan, and firms show a high level of reliance on entrepreneurial skills for access to expert resources. Inter-sector coordination is low, largely confined to personal ties. Subcontract relations are not necessarily long-lasting and tend towards reliance on multiple outsourcing. Overall, because of the low degree of mutual obligations between firms, access to resources largely depends on personal relations or family-like connections between the business owners (Whitley, 1992a: 71, 205-6).

This is true even for business groups. Though mostly controlled by the owning family through cross-shareholdings, these business-group firms are typically only loosely integrated. Within the groups, these firms are very personal, depending heavily on family-like relations of trust between the owner-managers of each firm or sets of firms. Outside the groups, they tend to rely extensively on subcontracting relations with non-group firms, whose connections to the groups are not necessarily long lasting (Orrù et al, 1992: 385). To summarise, the development of market organisations is far

more fragmented, despite the existence of business groups constituting an important feature of the economy.

(5) Significance of Personal Authority and Ownership and

(6) Significance of Formal Procedures

Finally, central to the nature of authority in Taiwanese firms is a high level of owner or family control. The internal co-ordination structures are strongly associated with ownership and are highly centralised. Personal relations are commonly the main bases for authority. The importance of personal connections is highlighted by extensive use of individuals related by blood or marriage and others with strong personal ties to the owner. The organisation of top management and the board are variations on each other. The high degree of owner control leads organisations not usually to function in hierarchies or rely on formal control procedures.

All these business practices result in employment policies being less institutionalised and more dependent on the personal choice of the owner. Employment practices are not governed by standardised procedures and rules but rather are informal, suited to the particular relationship between the business owner and individual employees (Whitley, 1992a: 207). The long-term employer commitment is constrained by the focus of family loyalties. This lack of long-term commitment is likely to encourage limited delegation to middle managers in Taiwan's family businesses where the owner typically takes all strategic and major personnel decisions (Whitley, 1992a: 77). As a result, business leaders maintain considerable social distance from subordinates and rarely explain and justify their decisions.

(7) Managerial Style

Trade unions are normally weak as the result of state oppression and control. Enterprise unions are integrated into managerial subordinates and often involved only in the organisation of company parties and excursions. The lack of strong unions in turn enables firms to enforce worker discipline and administer worker services rather than to represent their demands. The dominant managerial style here is very much didactic or paternalistic (Whitley, 1992a: 79).

(8) Employee Commitment

The considerable distance between the owners and workers constrained owners' development of mutual trust with their workers, except on a personal basis. In general, workers in Taiwan mostly obtain their jobs through their friends and relatives rather than through formal channels; and employers prefer to rely on personal recommendations for hiring a skilled and widely-experienced worker to fit an important managerial position. Loyalty among unrelated employees is often low and, as a result, this has created much higher rates of employee turnover. Ambitious skilled workers are eager to start their own business, as soon as they can obtain enough capital and business experience, rather than follow a career plan set by someone else's family business (Wong, 1985). Partly as a result of this, rates of new firm foundation and failure are both high (Whitley, 1990: 60).

The preceding discussions of business recipe materials inform us of the ways in which the Taiwanese function as economic actors, inter-firms relations both within and across sectors, and owners-managers-workers relations. With respect to my case PC industry, all of these materials can be analysed as specific business rules and resources for guiding and empowering firms' actions, and will now be discussed.

5.3.2 Business Recipe Rules

Strong Family Control

The first and basic social rule of Taiwanese business recipe is strong family control, which leads to the development of owner-managers and their close identification with the family interest. As discussed above, the dominant economic actors in the society are family businesses. Central to the nature of family business is its highly concentrated ownership structure which promotes the rule of strong family control. The owning family is reluctant to bring in outside shareholders, in order to maintain independence and to avoid the need to separate clearly company and family finances. Partly as a result, the executive board itself is often like an extended family, where major shareholders are familiar with one another. This emphasis on strong family control has inhibited the growth of a professional non-shareholding class.

As professional managerialism is by no means institutionalised, entrepreneurs¹⁴ or owner-managers are most important in co-ordinating economic activities. They are highly charismatic and intimately involved in all company affairs as well as in civic affairs. This emphasis on strong owner control also limits the scope of managerially integrated activities, because the owners prefer to have direct control of them (Whitley, 1992a: 203). The leadership performance of owners' wives is also distinctive, with their more careful character involved in day-to-day activities of the family business. While male owner-managers are responsible for purchasing, marketing and production, their wives are concerned solely with financial management. This emphasis of the owning family control has been connected to the interests of the owner-managers, critical to explaining Taiwanese firm behaviour.

¹⁴For the discussion of Taiwan's entrepreneurship and its conception, see Li (1986).

Low Levels of Vertical Integration and High Levels of Opportunistic Diversification

The second rule of Taiwanese business recipe concerns the development of firms which tend to be less vertically integrated and more opportunistically diversified than their Japanese and Korean rivals. Acquisition growth strategies are scarce in Taiwan, and hostile take-overs rare.

Unlike in either Japan or South Korea, there are relatively low levels of vertical and horizontal integration (Whitley, 1992a: 205) and a relative absence of oligopolistic organisations in Taiwan's industries (Hamilton and Biggart, 1988: 560, 565). In fact, the imperfect system of company law regulations has enabled Taiwanese businessmen to prefer to diversify their capital, resulting in elaborate tax-saving considerations. However, this diversification is by no means simply driven by tax incentives which favour new firms. Since economic uncertainty is a central feature in Taiwan's society, the small-to-medium size, single unit firm is so much the rule that when a successful firm moves to acquire another, no attempt is made at vertical integration in order to control the market-place or to reduce transaction costs; instead, firm acquisitions represent speculation in new markets and opportunistic diversification in a series of unrelated firms.

Overall, then, the general pattern of growth in the family business is opportunistic and, indeed, speculative. As personal owner control restricts the development of professional management, the owning family tends to put a great deal of emphasis on short-term financial performance rather than market share. Company growth is based on a preference for setting up new firms for each new venture in different fields rather than integrating activities through a single managerial hierarchy. Thus, flexibility is paramount, and this focus on ability to shift resources has facilitated opportunistic diversification if suitable partners are available to offer expert resources of professional skills and facilities (Whitley, 1992a: 204). This emphasis on

opportunistic diversification, in turn, limits commitments to a particular industry by getting access to controlled network resources of suppliers and trade agents to coordinate complementary activities. Partly as a result, they are unlikely to pursue integration growth strategies, and low rates of R&D/sales are typical.

Volume Expansion, Cost leadership and OEMs

Another important rule concerning firms' growth patterns is that they tend to pursue volume expansion, cost leadership and the OEM route in so far as profit-maximisation and/or family interest drive their action.

Instead of pursuing strategies of vertical integration and diversifying into unrelated areas, Taiwanese firms are very oriented towards volume expansion while concentrating on a restricted range of products (Whitley, 1992a: 66). The combination of this growth pattern and the export-oriented economy has boosted OEM processing business in the island. In order to get access to contracts, Taiwanese firms, while mostly OEM-based, tend to pursue a cost-leadership strategy with the acquisition of cheap economic resources available for action. Also, they tend to place emphasis on production adaptability as key strategic weapons, as opposed to the West's stress on Fordism - the mass assembly-line production of standard models in order to grasp economies of scale (Chan and Clark, 1992: 104). This emphasis on manufacturing ability, together with the political isolation of the state, has restricted the willingness of the owners to create internationally known brand names; even most of the leading firms have still made only nominal investments in developing foreign distribution organisations of their own.

Pluralistic, Opportunistic, Personal Exchange Relationships

The fourth rule of Taiwanese business recipe concerns the organisation of exchange relationships which tend to be multiple, opportunistic and personal. As indicated above, inter-firm relations in Taiwan are typically neither long-term nor exclusive, nor do they cover a variety of cooperative activities (Whitley, 1992a: 70-4). There is a tendency towards pluralism and opportunism, rather than to being exclusively tied to particular business partners, though firms show a high level of dependence on suppliers, industrial consumers and distributors and rely heavily on personal contacts and trust. Cooperative ventures between firms are fairly rare. Such inter-firm cooperation as can be found is mostly the result of policy and technology forces, such as state-supported R&D consortia and shortening product life-cycles. The low-levels of inter-family cooperation and trust have restricted the development of peak associations or organised interests. This implies that Taiwan has more strikingly decentralised private sectors than both Japan and South Korea. We can also find the relative weakness of Taiwanese industrial leadership. Firms' relationships at the industry level normally do not involve representatives of large aggregations of business interests. Though there are some consortia which have built up a consensual identification for solving industrial problems, these always ended quickly because of disagreement. For example, the biggest inter-firm consortium in the development of the Taiwanese PC industry - Notebook Development Consortium, organised by 47 local firms in 1990 - ended up with a radical price war between its members (*Electronic Business Asia*, Dec. 1990, July, 1991; Lin and Wang, 1991)

The combination of low degrees of inter-firm cooperation and weak association leadership results in the family business being reluctant to develop long-term commitments to a particular industry. General lack of concern with business reputation and patent protection are common, and respect for intellectual property rights is not taken seriously. Operating in such an environment, Taiwanese firms have a tendency

towards counterfeiting products, fabricating accounts, and other illegal practices such as the use of bank loans to speculate in real estate. These sometimes get them into a great deal of legal trouble (Gold, 1986: 88).

Opportunistic External Acquisition of Expertise

The final rule of Taiwanese business recipe relates to the management of personnel practices which promote opportunistic external acquisition of technology and expertise. In Taiwan, entrepreneurism is the main base for innovation. To some extent, however, the nature of entrepreneurism constrains firms' exploitation of expert resources of managerial profession. As access to expertise is confined to the skills and experience of the business owners, the family as a whole sometimes needs to secure professional expertise from outside organisations in order to respond to major technological changes in its product and so make use of market opportunities. This pattern of opportunistic external acquisition of technology is facilitated by the high level of employee turnover, typical of the Taiwanese business recipe. As external recruitment of senior engineers takes place very frequently and very openly, quick technical diffusion makes it more difficult for any company to create a monopolistic position, and the result has been a lot of small firms.

5.3.3 Business Recipe Resources

Capital Ownership

The basic and dominant resource of Taiwanese business recipe is capital ownership which enables the owners to control the labour of their employees and the products of their work and so the owners can engage in production and market activities. In addition to capital ownership, firms or business owners can draw upon other business resources of legitimacy to reinforce the scope of their activities. In the

case of the Taiwanese business recipe, for example, we can see that there are resources of paternalism, entrepreneurism, trustworthy family managers, networks, satellite manufacturing system, trading agents, curb markets, industry externalities and hard-working employees. These resources will now be discussed.

Paternalism, Entrepreneurism, Trustworthy Family Managers

One important point for analysing business resources of the recipe is the paternalism of the owning family which is drawn upon to provide necessary resources for securing the obedience of its employees. By adopting a paternalistic managerial style, the owning family prevents the growth of professional authority and the autonomy of workers in order to maintain direct control of company activities. This emphasis on strong family control constrains the owning family's access to professional resources, but greatly opens up resources of hierarchy and entrepreneurial authority. The risk-taking, active aspect of entrepreneurism provides firms with the enthusiastic ability to learn faster than their competitors and the capacity to direct the path of company growth. As top management is mostly recruited through family-like connections, the family business is managed by trustworthy family managers who tend to operate according to the interest of the owning family.

The combination of the highly concentrated ownership structure and a relatively small size of organisational structure provides the family business with ready access to chances, enabling them to be oriented towards immediate technological adaptability and to respond rapidly to newly-emerging market opportunities. They are thus likely to be able to move towards products which have just been developed or towards existing ones whose relative price has increased. In order to respond quickly to the emerging market, for example, many of these firms have established foreign subsidiaries by simply sending a member of the executive board abroad with complete autonomy to become established. Thus internally controlled resources can be combined

with strong entrepreneurial desire to seize new opportunities through the highly concentrated ownership structure. Overall, then, access to paternalism and entrepreneurism provides firms with the capacity of quickly adapting and evolving to the environment.

Networks, Satellite Manufacturing System, Trading Agents and Curb Markets

Another important resource of the Taiwanese business recipe is social networks which, additionally, provide subsidiary resources of satellite manufacturing system, trading agents and curb markets. The generation of these resources is particularly facilitated by the geographic density characteristic of the island. Indeed, the Taiwanese family business relies extensively on social networks of personal relations and family-like connections for resources such as land, labour, capital and information.

As indicated above, as market organisations in Taiwan are highly fragmented, the family business has historically developed techniques to aid forward and backward linkages that co-ordinate economic activities. These techniques include satellite factory systems, and a variety of distribution networks which provide important sources of business contracts and market information. Informal and mostly organised through networks of personal ties and trusts, these market relations are very developed. The satellite factory system, for example, is an informal industry organisation for small firms joined together to produce finished products. Such inter-organisational networks are based on non-contractual agreement sometimes made between family members who own related firms, but more often between unrelated businessmen. These businessmen informally negotiate such matters as the quality and quantity of their products and the shipping date (Hamilton and Biggart, 1988: 566, 585).

In considering the networks resource of the Taiwanese business recipe, trade agents are also important. In Taiwan, there are a lot of small trading agents aspiring to

uncover export opportunities for the proliferating small Taiwanese manufacturers. As Levy (1988: 44-5) indicates,

"..the relative ease with which Taiwanese firms across a wide range of industries enter into subcontracting relations with one another, and the presence of a large number of Taiwanese traders willing and able to explore the prospects for export of the products of nascent small and medium firms, imply that Taiwanese entrepreneurs can initiate production at a relatively small-scale, with little up-front investment required either for production facilities or for specialised market information".

In general, the satellite factory system, together with a lot of small trading agents, constitutes a distinctive intermediary institution which provides ready access to new market information between a number of different firms. In addition to the satellite factory system and trading agents coordinating market transactions, unofficial financial institutions have helped to integrate Taiwan's SMEs into the national financial system with the availability of the high saving rate of the local economy. In an environment where most bank loans go to state-owned enterprises or big businesses, most SMEs depend more on the unofficial curb market at high interest rates, mostly through the use of personal contacts and family connections. Although as a source of finance it is not perfect, the capital of the curb market offers firms, at least, access to flexible financial resources.

Industry Externalities

Another subsidiary resource which has arisen from the resource of social networks is that of industry externalities. In Taiwan, the family business almost invariably adopts a strategy of free-rider, which is facilitated by the resources of personal connections available and the proliferation of small firms in the industry. Technological diffusion becomes very rapid, as entrepreneurs get access to technical information by imitating their domestic rivals, or they learn the latest state-of-the-art from foreign firms.

Hard-working Employees

The final significant resource of Taiwanese business recipe is the employee. Taiwan's employees are usually hardworking and have also been distinguished by a high average level of education. Absenteeism is low. They also assign very high status to teachers and authority figures. These attributes of Taiwan's workers are a result of a number of factors. One is the combination of family ownership with the authoritarian-corporatist state in Taiwan. Another important consideration is that almost every male worker must spend two years in military service. A final important underpinning of motivation and discipline is the Confucian culture that puts a high value on education, hard work, self-betterment and respect for authority (Chan and Clark: 1992: 103).

5.3.4 Identification with the Recipe

As indicated above, Taiwanese business recipe includes the ways in which Taiwanese family businesses function as economic actors and develop relationships with one another and owners-managers-workers relations within organisations. Though this recipe is mainly around Taiwanese firms, they vary considerably in the extent to which they rely on the recipe to guide and empower their strategic actions. Because top management and inter-firm relations are specific to particular firms, the significance of connection to the recipe varies between them.

The first obvious identification in connection with the recipe is a highly familial top management. Although most Taiwanese firms are family-owned and -operated, there are still some firms which are managed by professional teams - such as the newly-created commercial banks, China Trust, Yu-San, etc. Family-managed firms in this sense provide a higher connection to the recipe than professional-managed firms.

Secondly, business-groups firms reflect a relatively higher connection to the recipe than single-unit family firms. In comparison with the single form of family business, subsidiaries of business groups show a relatively high level of business relations and so have the advantages of exploiting business recipe resources. Also, the high level of exchange relations between business-groups' firms has more strongly connected these firms to the dominant rules of the business recipe which guide their strategic choices. In general, the longer the groups operate in the society and the bigger their assets and size, the higher is their adherence to the recipe.

Thirdly, the significance of personal relations through top management to market organisation also has a positive effect on connecting firms to the recipe. Necessary to secure the right to the networks resource, the relations are mutually reinforcing between firms and will drive them to rely on the recipe for offering a source of technical learning, market information and business opportunities.

Finally, the education background of the owner-managers is also important. In a business environment where the ethics of education are revered, holding a Taiwanese or American higher degree is not only an important status symbol, but also a useful company identity, providing access to business recipe resources structured in the society.

5.4 PC TECHNOLOGY PARADIGM

In the last two sections I introduced two social structures: policy style and business recipe. In this section I will examine the technology paradigm, the third and last social structure, critical to explaining firms' strategic choices in response to the innovation process of a particular industry. Drawing on the concepts of evolutionary economics, the paradigm is a scientific problem-solution, utilised for the work according to what kind of product technology or management skill is to be used. As

applied to this empirical research, this paradigm is understood as the PC technology paradigm.

Just as the policy style and business recipe refer to both internal organisations and external relationships, the technology paradigm involves consideration of how the organisation of leading PC firms developed and how particular exchange relationships became established in the industry. In more detail, internally, the paradigm includes the management of manufacturing, assembly and innovation, the ways of dealing with company growth and the coordination of organisational structures. Externally, it includes the organisation of exchange relationships with suppliers, distributors and customers. In the world-wide PC industry, different competitors have made different choices with respect to how these activities should be dealt with. Some have designed their product around the IBM industry standard in order to have access to software, while others have been using a proprietary operating system. Some are carrying out their own innovation programme, while others are finding sources from outside. Some have maintained stable subcontracting relationships with suppliers, while others pursue multiple outsourcing. This shows that there may be different ways to carry out the activities in the PC industry. But in order to demonstrate their correctness and modernity, firms have a tendency to follow the technology paradigm - the dominant pattern of activities set by the most successful firms in their particular areas. The nature of firms as social agents, then, is interdependent with the ways in which they are embedded in the institutionalised patterns of the technology paradigm, in so far as the industry has developed.

5.4.1 The Development of Dominant PC firms and Exchange Relationships

As discussed, a technology paradigm is established by the most powerful and successful firms in their particular areas. In the case of PCs¹⁵, there are many firms contributing to the paradigmatic formation of the industry, but the most important actors are Apple, IBM, Intel and Microsoft. In 1976, Apple developed Apple II PC, using proprietary standards both to build their hardware and write their software¹⁶. Between 1976 to 1981, Apple led the PC industry with its company size and profits growing rapidly¹⁷. Partly because the PC revolution hit so fast and so unexpectedly, partly because Apple did not have the established marketing assets to serve its proprietary product strategy, the company did not create a monopolistic position, resulting in years of market turbulence and intensive competition (Forester, 1987; Freiburger and Swaine, 1984; Larsen and Rogers, 1984). However, the structure of the PC industry began a significant change in 1981 when IBM entered this market.

In line with its overall business policy of gaining and subsequently maintaining a dominant market share in every growth segment of the computer industry, IBM introduced the IBM personal computer (IBM PC) in 1981, using a 16-bit microprocessor¹⁸. Because it wanted to do this quickly, IBM assembled its machines

¹⁵The computer industry, or as it is broadly referred to information technology (IT), eludes precise definition. But, the most commonly distinguished segments in the computer are hardware systems, peripherals, information services and data communication. This section is a focus on microcomputer integrated systems.

A microcomputer, or as it is sometimes referred to personal computer (PC), is made up of many separate items. Among the most important parts of the system are the central processing unit (CPU), the memory (random access memory-RAM & read only memory-ROM) and the input-output (I/O) ports, which are linked together by means of the system bus (Moss, 1992: 2-3, 10). In addition to the traditional desktop personal computers, there are two principal categories of portable machine: Laptops and Notebooks. As the availability of smaller components, improved screens and longer battery-life brings more and more portable computers into the market, portable machines are rapidly becoming more sophisticated and powerful. Today most portables are as powerful as their desktop cousins.

¹⁶For early description of the development of the PC, see Freiburger and Swaine (1984).

¹⁷For Apple's history, also see Larsen and Rogers (1984: 3-24) and Sculley (1987).

¹⁸For the history and technology of microprocessors or integrated circuits, see Dorfman (1987: 171-203).

from off-the-shelf components made by firms which were also supplying other PC firms (Carroll, 1993: 21-3, 26-42; Chposky and Leonsis, 1989: 21-2). It arranged to buy the two most important parts of the machine - the microprocessor and the operating-system software - from (respectively) Intel¹⁹ and a small Seattle-based company, Microsoft²⁰ (Chposky and Leonsis, 1989: 39-53). In addition, IBM made its PC easy to copy and encouraged the proliferation of PC clones to gain market penetration in its battle with Apple²¹. Between 1981 and 1984 IBM captured more than a third of the market for microcomputers. By 1984, the IBM PC had become the industry's standard. The manufacturers who used to dominate the microcomputer market with their own proprietary systems before 1981 (the technological pioneers in the microcomputer market, such as Acorn, Apple, Commodore, Tandy etc.) got into serious difficulties after IBM's entry into this segment of the market (Forester, 1987: 139-42), as the cost of developing and maintaining one's own proprietary systems was very high. Of the manufacturers of non-IBM-compatible systems, only Apple managed to maintain a significant market presence. Eventually, this company switched to a focus strategy based on differentiation with its technologically innovative Apple Macintosh range, introduced in 1984 (Sculley, 1987).

In the early-to-mid 1980s, the structure of open industry standards encouraged scores of PC firms to clone copies of IBM's PC with easy access to component suppliers such as Intel and Microsoft. These firms have become two of the biggest beneficiaries of the growing PC market. With easy access to components, some of the clone firms concentrated on maximising their R&D projects and constantly advanced to develop technologically innovative products - for example, Compaq in portable

¹⁹For a further discussion of Intel's history, organisation and strategy, refer to Quinn (1985) and Ristelhueber (1993).

²⁰For a detailed discussion on Microsoft, see Manes and Andrews (1993).

²¹For detailed discussions of how IBM developed its first PC, see Chposky and Leonsis (1988).

PCs²². With the rise of clone competitors to penetrate into its market shares and the rise of PC networking technology to threaten its minicomputer market (McKenna, 1989: 33-7), IBM sought to abandon the open architecture design of the IBM PC by launching its entirely new Personal System (PS/2) range of PCs in April 1987 (Moss, 1992: 21). On the hardware side, IBM abandoned the open architecture design and replaced the PC AT expansion bus by the Micro Channel Architecture (MCA) expansion bus, of which the technical design is protected by patent. On the software side, IBM introduced a completely new operating system called OS/2, which is under IBM's control and forms part of its proprietary System Application Architecture. With the launch of the PS/2 range, IBM attempted to use its dominant position, in terms of its installed base of microcomputer systems, to replace these open systems with systems based on its own proprietary technology over which it had complete control (Chposky and Leonsis, 1989: 215-8).

However, IBM's proprietary strategy based on the PS/2 range PC has proved unable to change the dominant rule of the PC technology paradigm - that of the open systems or standards around the core IBM PC/AT technology. The reluctance of both users and IBM's competitors to abandon the current IBM PC/AT standard and commit themselves to the MCA has been strengthened due to the challenge from its rivals' strategic alliance. In September 1988 a number of manufacturers including Compaq, Olivetti, Tandy and Zenith formed a consortium to develop a new expansion bus, the Extended Industry Standard Architecture (EISA), which is based on and compatible with the PC AT bus (Moss, 1992: 21). After years of competition, not only have the existing open standards based on the PC AT bus and MS/PC-DOS survived, but their eventual replacements are likely to be based on the EISA, neither of which is under IBM's control. Overall, then, the established dominant rule of open systems or

²²Throughout most of its history, Compaq has consistently been a step ahead of IBM. For example, in 1986, Compaq brought the Despro 386 to market months before IBM introduced its first computer with the new Intel chip. But, perhaps, this is because IBM was reluctant to advance its PC technology so quickly as this might endanger its minicomputer market.

standards (McKenna, 1989: 163-7; Grove, 1990) prevails in the PC technology paradigm. This macro rule together with the radical technological advance in microprocessors and the integration of PC technology into the area of telecommunication imply several subsidiary rules that underlie firms' growth patterns, their activities of purchasing, innovation, distribution and the coordination of organisational structure. These subsidiary technology rules will now be discussed.

5.4.2 Technology Paradigm Rules

Continual Growth (consistent with the Industry Core Technology)

The first subsidiary rule arising from the macro rule of open systems concerns the growth pattern of firms. In order to survive and grow, they need to broaden or upgrade their product range under the core technology of IBM PC AT bus, MS-DOS or EISA. This continual growth pattern is based on the prevalence of open system rule which will eventually drive out PC firms which create incompatible systems. The downfall of Wang Computer, for example, is partly attributed to its proprietary strategy which fails to conform to the open systems rule. Typically, the change of Apple's proprietary strategy reflects its conformity to this growth pattern. Traditionally, in contrast to IBM's leading technological forces with the PC standard system, Apple has always deviated from the new computer industry's trajectory by differentiating the product range under its Macintosh system. However, the constant price-cutting by other PC firms and numerous strategic alliances in the industry eventually made Apple's strategy untenable. At the end of 1993, Apple decided to license to other computer firms the software that makes its Macintosh PC unique. This change reflected Apple's new strategy to broaden the company's markets by abandoning the strict proprietary software approach that Apple had adhered to for more than a decade (*Financial Times*, 15 Nov. 1993: 23). Moreover, at the time of writing, Apple has joined together with IBM and Motorola to develop a new RISC

Shen?

chip, called the PowerPC which is able to run IBM PC software of all types. To Apple, holding an open system was finally proved of significant importance to the survival and continual growth of the company. Overall, then, in the search for institutional legitimacy, PC firms need to conform to the open systems rule while expanding their product range consistent with the core technology of the industry.

Outsourcing

Under the influence of open systems, the rule of outsourcing is prevalent in the PC technology paradigm. In practice, an open systems rule implies industry-wide standards, which allow manufacturers to plug components and subsystems, procured from outside, into an unsophisticated system with little mastery of the technologies required to produce the components. With access to standardised components and a well-defined standard architecture, the open systems rule also enables the companies to channel their research and development efforts into maximising hardware performance in selected areas. These permit the products of a growing number of computer firms to work together, which has opened the door to numerous new firms which now compete at every link of the "value chain", from chips, system and software to distribution. The high level of market interdependence, together with radical technical development, highlight the importance of relationships between specific business partners. Overall, then, the rule of outsourcing replaces vertical integration, typical in the old mainframe computer industry²³.

²³For the computer industry prior to 1975, particularly of the US, see Soma (1976). For mainframe and minicomputer segments after 1965, refer to Dorfman (1987: 43-121). For a general discussion of computer revolution, see Forester (1987: 17-49).

Standardised Design and Cheap Production

Another important technology rule is standardised design, leading to the need for cost reducing in the process of operation. Again, this rule arises from the macro-rule of open systems. Once established, the open standards rule offers technological networks which can entrench standardised compatibility, and which may "eventually 'corner the market' of potential adopters, with the other technologies becoming locked out" (Arthur, 1989: 116). Consequently, the existing technology becomes extremely hard to break out of, even when it is not the best available or abreast of the latest technology. As Modis (1993: 165) implies, the notion of technological compatibility reflects the differentiation of the technological "species" and impacts the rate of substitution. The less differentiated the new technological species, the less resistance it will encounter in its diffusion. In the extreme case of microcomputers, firms operating in the wider degree of industry open systems are likely to find it difficult to differentiate their products without violating the standards. Standardised design is thus a typical element of the production strategy.

The combination of open systems and standardised design rules, in turn, has drastically reduced barriers to entry to the industry. The consequence of this has been radical price competition and so leads to emerging market opportunities for original equipment manufacturers whose advantage is on the cost side. In order to get access to contracts, these OEM firms have a tendency to pursue low cost strategies and so tend to locate their plants in countries where cheap labour and land are available.

Rapid Product Change and Strategic Alliances

In addition to the general rule of open systems, rapid product change also shapes the PC technology paradigm. As market competition becomes fiercer in the PC industry, joint ventures, cooperative activities and alliances multiply rapidly (McKenna,

1989: 151-4). Even firms with a revolutionary product need to promote system viability of technical knowledge for other firms to exploit it thereby enjoying a "transient monopoly" (Garud and Kumaraswamy, 1993: 365). But as the technology paradigm of PCs is moving towards more uncertainties with radical technical advances, firms must also track their direct competitors to avoid being caught off-guard by a technological breakthrough. Such market dynamics have undoubtedly brought out to the forefront "learning/adaptation/imitation" capacities (Dosi et al, 1990: 116) which are particularly important for PC firms because of technological discontinuities and specialties.

Relatedly, strategic alliances are a useful way of acquiring leading-edge technologies and so increasing firms' technological adaptability. Although the alliances are often between firms with complementary products, many are between once-bitter rivals. Furthermore, an added complication in most interfirm deals is that few alliances are exclusive. Firms usually retain the function to operate independently, or strike similar alliances with other firms. In 1993, for example, the two most bitter computer rivals of the last three decades, DEC and IBM agreed to work together on a single open network management platform (*Datamation*, 15 Oct. 1993: 59-60). But IBM is also, jointly with Apple and Motorola, to develop new microprocessor architecture, operating systems and multi-media products. On the other side, Apple, like much of the rest of the newly developing PC industry, remains determined to steal business from IBM's corporate customers (*Financial Time*, 16 March 1994: II). Despite these, relationships between challenger companies still tend to emerge constantly.

Respect for I.P.R.

Just as every existing product technology appears to be vulnerable, a new rule arises from the technological strategy angle that needs to maximise R&D resource utilisation. In order to maximise their R&D investment and long sustain their

advantage, US firms were extremely casual in enforcing intellectual property rights, "an attitude that was reinforced by the confused state of patent and copyright protection in computer technology during most of the 1960s and 1970s and by a generally hostile antitrust and regulatory environment" (Ferguson and Morris, 1993: 155).

While substantially determining the future's innovation rule of the industry, I.P.R. battles are truly important in today's PC wars. Because the PC paradigm is characterised by multiple technological trajectories and continuing technological breakthroughs, innovative forces from time to time nullify oligopolistic power stemming from stable entry barriers. The basic technologies of computer - microprocessors, memory chips, screens and software - continue to advance quickly²⁴, creating new products and altering both the capabilities and pricing of existing products in every layer of the industry. These innovations are so widely dispersed that predicting which firms will succeed with new technology, or which will suddenly spring up as a new competitor, is far more difficult than in most other industries. However, once approved, the innovations will bring huge revenues, important to secure the company's long-term development, just as the case of Microsoft shows (Manes and Andrews, 1993). Therefore, in order to maintain sustainable competitive advantage, PC firms are now generally much more aware that licensing practices are a key element of a technological strategy. Consequently, the rule of respect for I.P.R. becomes strongly institutionalised, indicating one important legitimate process of competition for access to technology paradigm resources.

²⁴For example, according to Moore's Law, the transistor density that is feasible on a microchip doubles every 18 months (Grove, 1990: 148-9).

Non-integration into Distribution

In terms of the demand side, the evolution in the market is increasingly fragmented with growing competition around distribution channels, logistics and marketing expenditure. PCs are now mass-marketed in the same way as soap powder or soft drinks, and are sold off the shelves like cans of beans. As the number of systems phased-out of the market is very high, consumers are going for more powerful systems. As buyers of microcomputers have become better informed, they have come to regard the particular brand of hardware as less important than its ability or otherwise to run the desired (independently-supplied) applications software. In consequence, they have tended to become more price sensitive with respect to microcomputer hardware. Because of quick market phase-out, increased financial resources and well-established distribution and service channels are essential to firms engaging in marketing their own brands. For these own-brand firms, some have selectively authorised dealers to sell their products, while others use mass-retailing channels and others sell directly to the final customer. Indeed, this choice of distribution is probably the most difficult of all, in so far as firms seek to find the most efficient way to reach customers. As we can find in the industry, there are a lot of effective ways of dealing with marketing and distribution. For example, Dell grew from nothing in 1984 to just over \$2 billion in sales in 1992 because it invented a new, lower-cost way to distribute PCs: mail order sales backed by telephone hot-lines offering technical advice (*Economist*, 27 Feb. 1993: 18). However, partly because of the volatile nature of the market and partly because of the dis-integrated nature of the industry, the legitimate way of managing distribution tends to focus on "dealers" which accounted for about 50 per cent of the whole PC market (*Economist*, 27 Feb. 1993: 18). Indeed, the multi-layer structure of the PC industry indicates the non-integration into distribution, just as the rule of relationships works against vertical integration in the industry.

Flexibility and Entrepreneurism

On the organisation of strategy, the rule certainly is to match the structure with the dis-integrated nature of the industry and the uncertainty of technological development. Just as IBM and Microsoft did in the early 1990s, the challenge for incumbent management is to institute an internal cycle of self-refreshment that matches the underlying pace of industrial change. In 1992, IBM restructured the organisation in an effort to "breathe some entrepreneurial energy and responsiveness into its business units" (*Datamation*, 15 June 1993: 27). In responding to the market uncertainty, Microsoft was very "aggressive in taking legitimate competitive actions" with restructuring its organisation to focus more on global marketing edges (*Financial Times*, 16 March 1994: 30). Unlike IBM which has been forced to restructure because of falling sales and trading losses, Microsoft remains the world's most profitable company. In order to protect their existing businesses and also be able to exploit the new market opportunities, both leading computer firms - IBM and Microsoft - have restructured their organisations to form SBUs (Strategic Business Units) or individual profit-centred units and so to breathe the energy of entrepreneurism. While focusing on the management of the immediate technological environment, these independent units are likely to respond quickly to the rise of market opportunity. In contrast to Toyota's managerial paradigm where base technologies are centrally managed and assumed to be stable over a period of time (Ferguson and Morris, 1993: 171-2), the SBUs organisation evolved to accommodate very rapid and unpredictable industrial change at any level in the system. With technological information now sifted through divisional managers, top management can concentrate on overall strategy. While securing the organisation of flexibility and the activity of entrepreneurism for action, the SBUs are the effective way, then, of dealing with the complexity of the PC industry.

5.4.3 Technology Paradigm Resources

Following technology paradigm rules in their actions, firms are legitimate and then have access to a bundle of technology paradigm resources. The PC business in this sense is ultimately a battle of resources, which is constructed around the availability of network externalities, the competition for access to Intel and Microsoft's latest products early, Japanese LCD suppliers, US distributors, innovation partnerships, business contracts and highly skilled engineering labour. These technology paradigm resources will now be discussed.

Network Externalities

While discouraging specific differentiation, the open systems rule provides firms with accessible resources of "network externalities", created by network industries, access to technical knowledge, choice of off-the-shelf components and compatibility between products manufactured by different firms (Garud and Mumaraswamy, 1993: 352). In contrast to the proprietary nature of the old computer industry which denies rivals access to technical knowledge, this open systems rule promotes public standards and expertise to which all firms have access. As well as encouraging entry into the marketplace, the open systems rule keeps consumers locked into industry standards as the size of the industry network increases. Overall, then, under the influence of open systems, the PC industry is characterised by standard interfaces and multi-system compatibility that provide the resources of network externalities to benefit clone makers and industries producing complementary products (Garud and Kumaraswamy, 1993: 352).

Access to Technological Leaders - Intel, Microsoft and Japanese LCD Suppliers - and Access to US Distributors

For most PC firms, some resources of network externalities may be equally accessible, but the acquisition of other resources is very competitive. The combination between products soon phased-out and the dis-integrated nature of the industry implies the importance of access to Intel, Microsoft and US distributors. Access to Intel and Microsoft provides firms with the latest technology and products early and so can establish firms' first-mover advantage in the market. As indicated above, outsourcing is the rule of the industry. In order to get access to suppliers and so extend their products into new application areas, firms need to commit themselves into exchange relationships which will ensure that they acquire leading-edge products from other companies. In the 1980s, for example, Compaq owed much of its extraordinary success in the market for assembled PCs to Intel's willingness to provide it with early supplies of its latest microprocessor (*Economist*, 27 Feb. 1993: 23).

Just as the case of Compaq implies, relationships provide a source of access to new technologies and markets. Of the many exchange relationships in the industry, the partnership with Intel and Microsoft certainly is a superior one, as both firms dominate in their own particular areas and continue to lead the development of PC products. This access to Intel and Microsoft is particularly important for small companies, since their connections to the paradigm are limited. In addition, as the emergence of notebook PCs has achieved a significant place in the industry, the relationships with Japanese LCD suppliers will also be critical, as they dominate the LCD market (Johnstone, 2 July 1992).

On the other hand, the connection to US distributors will provide firms with both the existing marketing networks and market information which are critical to securing the new market opportunities (*Economist*, 27 Feb. 1993: 18-9; Gilbert and

Strebel, 1991: 83; McKenna, 1989: 150-60). By authorising dealers to sell their products, firms can get access to existing marketing networks in order to reduce market risk and protect their existing business.

Business Contracts and Innovation Partnerships

Essential to serve customer expectations for less-expensive products, the PC technology paradigm provides subcontracting resources available for clone makers. The rapid growth of the market together with the need for cost reduction in the industry has forced many US PC firms to focus on product research and development, in so far as these firms tend to rely on the external acquisition of products. For example, in late 1994, the current largest PC firm Compaq chose Inventa - a Taiwanese PC firm - to manufacture its notebook PCs (*Central Daily News (Int'l)*, 5 Jan. 1995). In addition to subcontracting resources, the paradigm provides firms with access to innovative partnerships. Essential to secure the long-run competitive position in the volatile PC industry, partnerships particularly offer firms access to new markets, the technological competence of partners and the prospect of monitoring technological opportunities (Hagedoorn and Schakenraad, 1990; Powell, 1987: 71).

Highly Skilled Engineering Labour

Finally, as the rule of the competing technological trajectories and radical product change offers the incentive to encourage potential new competitors, the PC technology paradigm makes abundant human resources available. Over the past two decades, a vast corps of electronics engineers and programmers has been trained in the IT area, especially with experience of open systems. Their job mobility and willingness to take risks are legendary. Thus, despite the fact that the industry's overall profitability has fallen so sharply, hordes of new competitors continue to enter almost every sub-segment of the industry. For example, even in microprocessors - capital intensive and

specialised business - Intel now faces competition from a small firm - Cyrix, started by two engineers in 1988 (*Economist*, 27 Feb. 1993: 23). The competition for access to the most talented engineers may be very high. But in order to acquire a wide range of expertise and the latest technologies, firms have a tendency to recruit their employees from Silicon Valley²⁵ where a lot of engineering human resources are available for empowering their actions.

5.4.4 Identification with the Paradigm

As discussed above, the technology paradigm of PCs is mainly created by, and around, the US firms - such as IBM, Compaq, Apple, Intel and Microsoft. Recently, Japanese suppliers also play a key role in the area of notebook PCs. It is therefore reasonable to expect that most Taiwanese PC firms would be on the fringe of the PC technology paradigm and so show a relative distance from the paradigm. However, partly through personal connections, partly through business contracts and exchange relationships, some Taiwanese firms have demonstrated a relatively high connection to the paradigm and so have a tendency to rely on the paradigm to guide and empower their actions.

There are several characters that will reinforce firms' connection to the paradigm. Firstly, holding higher degrees (esp. in Engineering) from US universities, particularly those in California, will be useful in helping firms get access to the central position of the global PC technology - Silicon Valley. In Taiwan where the family business predominates, the education background of owner-managers thus plays a key role in indicating firms' connection to the paradigm.

²⁵For a detailed discussion of the Silicon Valley semiconductor industry, see Forester (1987: 50-80).

Secondly, partly through business contracts, partly through outward investment, some firms may have developed long-term relationships with their business partners, hence increasing their connections to the technology paradigm. For example, by focusing on OEM business in particular areas such as notebook PCs, some Taiwanese firms - such as Compal and Clevo - have developed a considerable connection with their US industry consumers.

Finally, relationship with key parts suppliers connects firms to the PC technology paradigm in the strongest sense. As indicated above, alliance or partnership is a major rule of the PC game which provides firms with access to new technologies and markets. In particular, firms' high connection to key parts suppliers has several advantages for the accessibility of technological specialties and market opportunities. To illustrate, a slogan such as "Acer is among the first to market Pentium-based PCs in the world" (*Business Week*, 2 Jan. 1995) certainly is influential. Acting as Intel's sales representative in Taiwan, Acer has an advantage to market their products faster than other Taiwanese firms because of its business connection with Intel.

In general, of the key parts suppliers, firms' connection either to Intel for CPUs or Japanese firms for LCDs will enable firms to pursue paradigm-oriented strategy. For more than two decades, Intel has dominated the global chips business which is still growing fast (Ristelhueber, 1993: 58-67; *Financial Times*, 15 Nov. 1993: 40; 15 April 1994: 28). As indicated, by acquiring leading chips from Intel, firms can get their own products to market faster and so enjoy a first-mover advantage. On the other hand, currently, only the Japanese firms - such as Sony, Toshiba and Sharp - have LCD technology, and they are not selling it (Johnstone, 2 July 1992). Furthermore, since the introduction of notebook PCs in the marketplace, the supply of LCD has always been shortening (*Electronic Business Asia*, March 1993). Having a high connection to the Japanese suppliers thus will be useful in helping firms maintain a stable LCD supply and so will facilitate their development of long-term commitments to the PC industry.

5.5 CONCLUSION

I have now finished introducing some empirical aspects of the three social structures relevant to the evolving Taiwanese PC industry of 1980-1993. It was my argument in Chapter 3 that these three structures - policy style, business recipe and technology paradigm - represent a distinctive approach to analyse firms' strategic agency. Each of these structures embodies a particular body of structural sources of power which firms may use to interact meaningfully. Each of the structures gives firms a sense of direction that may differentiate their action from one another strategically. Operating in such a context, firms can choose their strategies: they can pursue policy style-oriented, business recipe-oriented or technology paradigm-oriented strategies. But why do they choose different strategies? In answering this question, I shall introduce the conceptual category of corporate identities which provides an institutional link between structure and agency. But before taking up such issues, I will examine the second concept of my theory - industry system - which is collectively constituted by the three social structures.

As I have shown in Chapter 3, the three structures - policy style, business recipe and technology paradigm - do not function in a singular position, but are interrelated in a certain way. Instead of adopting the static view of institutional environments (Jacobson, 1992), I emphasise the nature of social tension or conflict in my tripartite structural theory of strategy. In my theory, this conflict, while arising from the patterning of social structures concerned, will create divergent institutional pressures which impinge upon the activities of economic actors who operate within the same industry system.

For example, policy and technology rules of respect for I.P.R. coincide, but conflict with the business recipe which has a tendency towards counterfeiting and

illegal activity. Equally, the policy style search for own-brand marketing has led to conflict with the business recipe tendency towards OEM, so providing a clear choice for Taiwanese PC firms. Conflicts between policy and technology rules of inter-firm cooperation and business rule of opportunistic exchange relationships likewise produce the dilemma of a firm's choice of purchasing - a dilemma between supplier loyalty and diversification of key parts sources. This consideration of structures patterning and social conflicts sets the stage for Chapter 8 in which I integrate the three structures - Taiwanese policy style, Taiwanese business recipe and PC technology paradigm - into clustering or patterning by examining the evolution of the Taiwanese PC industry which is empirically applied to my ideas of industry system analysis.

CHAPTER SIX: INDUSTRY SYSTEM

6.1 INTRODUCTION

In Chapter 5 I introduced empirically the three social structures - Taiwanese policy style, Taiwanese business recipe and PC technology paradigm. In this chapter I shall examine the patterning of the three structures which constitutes the Taiwanese PC industry. As discussed in Chapter 3, I suggest that the patterning of social structures indicates the formation of a social system. In this way, I refer to the organisation of an industry as a particular type of social system, an industry system made up of policy style, business recipe and technology paradigm. All three of these structures refer singly to a variety of institutionalised patterns that come together in a given social locale to govern and inspire industry activities. In particular, these structures as a whole are not effectively integrated, but are more or less conflicting. The concept of industry system thus brings to our attention the existence of conflicting avenues for action, between which industry firms need to choose. In sum, in this chapter, I shall introduce how the system of the Taiwanese PC industry can develop internally conflicting avenues, critical to explaining strategic choices and differences across my case study firms.

Beginning in the next section, I will first discuss the emergence of the Taiwanese PC industry, and provide the basic data on its major actors, its growth, product types and related sectors. Secondly, I will relate the formation of the industry to the three structures. In particular, I will examine in detail the implication of this Taiwanese PC case; i.e. How do systemic tensions or conflicts develop from the industry? and, what should firms do to negotiate the conflicts? It is from this section that I shall move from the meso-level of industry system analysis to the micro-level units analysis of individual firms. In the third section, I will then provide a brief discussion of business organisations in the industry. This discussion sets the scene for

the following chapter, in which I shall discuss the third conceptual category of my theory - corporate identities - which connect strategic choices with social structures and industry system.

6.2 THE TAIWANESE PC INDUSTRY

The origin of the PC industry in Taiwan dates back to 1974 when the first industry company - Mitac - was established as sales representative for Intel in Taiwan. Around that time inventions were made which allowed the use of micro-processors in the making of PCs¹. However, actual PC system production in the economy is a fairly recent activity stemming from the 1980s. During the late 1970s, led by the domestic appliance firms Tatung and Sampo, the industry amounted to no more than some monitors being produced for export (Schive and Hsueh, 1987: 131). The big breakthrough came in 1981 when the Apple II clone was developed and production began in Taiwan². In the same year, with the shut-down of TV gambling machines, the existing domestic electronic parts firms transferred their facilities to the assembly of the Apple II clones. The entry of these local firms made microcomputers the most explosively growing manufacturing industry in Taiwan at that time³. In particular, in September 1981, the information sector was listed by the state as one of the strategic industries. Since then, Taiwan has really developed a prosperous PC industry, which

¹For other discussions on Taiwan's information industry, see Chang (1990); Chu (1987); *Economist* (9 July 1994: 83-4); Kraar (1994); Madu et al (1991); Schive and Hsueh (1987); Wade (1990).

²The world's first Apple II-compatible was developed in the USA. In Taiwan, the first Apple II compatible was developed by private industry but there is no source to trace its origin. However, at least we can be sure that it was not developed by state-supported research agencies.

³With the entry of the former TV assembling manufacturers, in just two years, the number of PC firms soared from some 10 to about 100 in 1983 (III, 1991a: 6). However, this type of company is generally unlikely to survive among today's competition in the industry. For example, ARC, once the fourth biggest PC manufacturer in Taiwan was closed down in 1992; whereas Copam was faced with liquidation in 1993.

currently assembles more than one tenth of PC systems world-wide yearly and has a very significant place in many peripheral products. Though such vital components as chips, HDDs, LCDs and operating systems have to be imported, the design of PCs is carried out locally. This is a marked contrast from traditional Taiwanese assembly industries such as the television industry, which in its early development relied on both Japanese components and design (Schive and Hsueh, 1987). The sustained success of the PC industry, together with other IT products, can be demonstrated by the statistics on various dimensions, summarised in Table 6.1. As can be seen, Taiwan now commands more than 3 per cent of the world information industry.

The starting point for the development of the PC industry went beyond Taiwan's industrialisation model. Unlike its other technology-intensive industries, Taiwan actually moved into the microcomputer areas not far behind the U.S. and no later than Japan. In the early 1980s, Japan's neglect of PC areas had provided an opportunity for Taiwanese firms to catch up with U.S. technological progress. Partly for this reason, the information industry has for a long time been identified as a "star" in the economy in that it may help deliver Taiwan's industrialisation from the model of Japan's development, which Taiwan has traditionally followed. Operating in such an industry, some leading IT firms, such as Acer and UMC⁴, thus may have greater opportunities to be viewed as national champions over the other industrial firms.

The IT industry in Taiwan has been described by many industrial analysts and academics as fragmented, dynamic, innovative, highly competitive and quick learning (e.g. Kraar, 1994; Schive and Hsueh, 1987). International trade is significant and increasingly important to national economies. It enjoyed rapid growth through the 1980s and has continued to expand by integrating other local sectors, such as semiconductor and telecommunications. Discontinuities in technology from time to

⁴United Microelectronic Corporation (UMC) is Taiwan's first manufacturer of integrated circuits with a 45 per cent equity share held by five private local firms (Wade, 1990: 104).

Table 6.1 The growth index of the Taiwanese information industry

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Total production value (US\$m)	-	-	-	-	1,260	2,134	3,839	5,324	5,484	6,149	6,908	7,991
Total production value/GNP (%)	-	-	-	-	1.9	2.7	3.7	4.2	3.6	3.8	3.9	4.2
Production ranking	-	-	-	-	-	23	18	13	13	10	9	9
Export value (US\$m)	105.62	160	418	1,004.8	1,220	2,063	3,701	5,152	5,244	5,873	6,546	7,474
Export value/Taiwan's total export value (%)	-	-	-	-	3.9	5.2	6.9	8.5	8.1	9.1	8.9	9.2
Export value ranking in Taiwan	-	-	-	-	11	7	4	3	3	3	3	3
World-wide ranking	-	-	-	-	9	7	7	6	6	6	7	6
World market share (%)	-	-	-	-	1.0	1.5	2.4	3.1	3.0	3.0	3.1	3.2

Source: III (1983-1993) *Yearbook for Information Industry*. Taipei.

Note: 1. Hardware only

time enabled firms from outside the industry to capture a series of sub-markets. This also created constraints on existing firms to achieve dominant market power. Without a large home market, the global demand for PC applications was the major inducement for the specialisation in the PC industry in Taiwan. In addition, the state provides a tightly-regulated exchange system, important to international competition.

In the industry, there are numerous trade associations which are business or geographically based. However, a peak computer association is absent, implying that the development of the industry does not follow the classical corporatist model. The export-oriented SMEs character of the PC industry makes it difficult to organise the large aggregations of industrial interests which thereby explain why the trade associations are numerous but no one is sufficiently large to represent the organised interests of the industry. Among these, the TCA (Taipei Computer Association) is the biggest association with a membership of 5,000 in 1993. In an environment where the essence of business is familism and the markets are mostly export-oriented, the functions of the trade association are limited to organising exhibitions or acting as an intermediary voice between members and government authorities.

By 1993, the industry remained highly export-oriented, accounting for roughly 95 per cent of the total production. Own-brand products are low (Figure 6.1), though there were some firms like Acer, Mitac and Twinhead gradually building up their marketing channels and achieving a very stable market in some countries. Drawing on cheap engineering labour, most Taiwanese PC firms are generally production oriented and follow strategies heavily depending on OEM sales for the majority of their business.

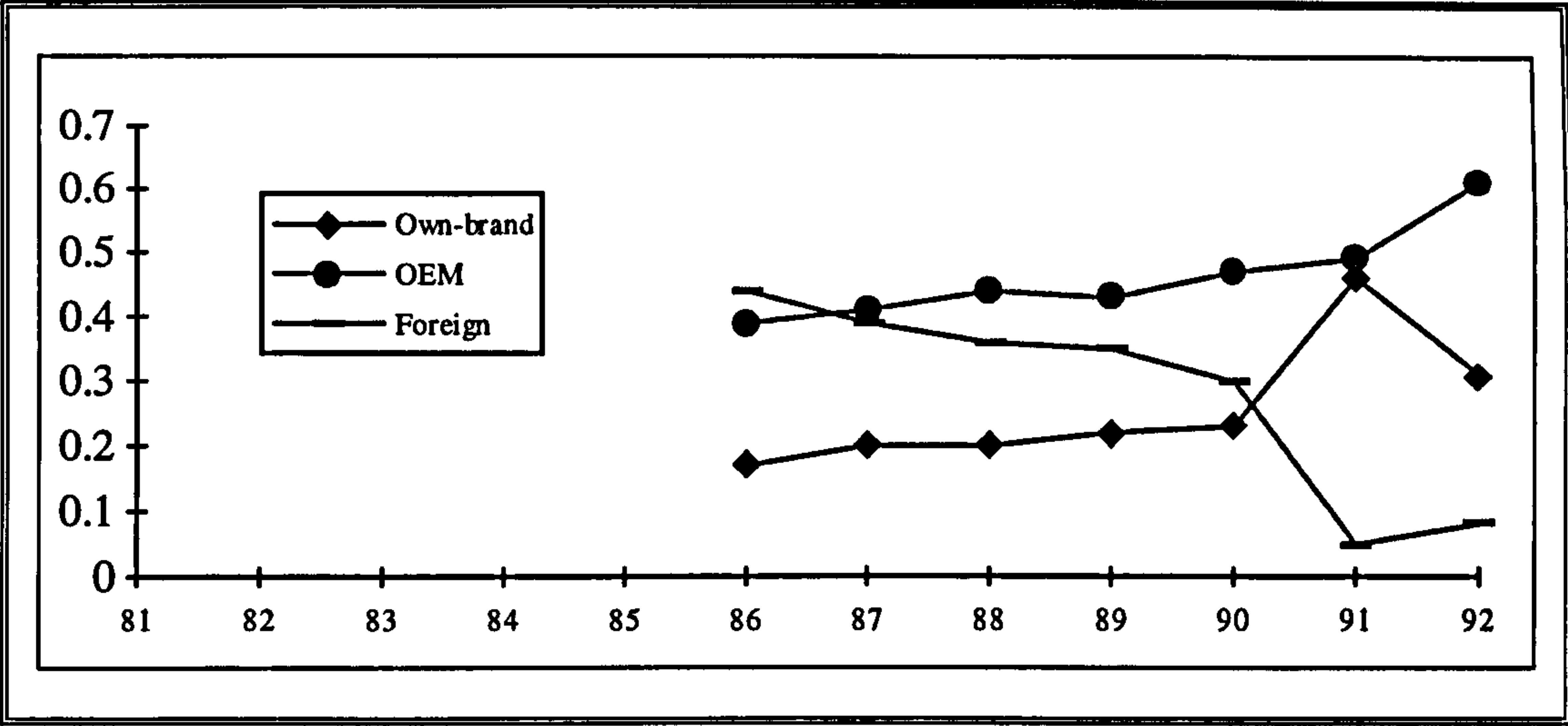


Figure 6.1 PC export value by product type: Own-brand, OEM and DFI (by percentage)
Source: III (1986-93) *Information Industry Yearbook*. Taipei.

The home PC market was rarely protected, though some key components such as HDD are subject to certain tariffs. Co-operation and joint ventures in the industry have proliferated, though they mostly fail to last. Since the late 1980s, backward integration has been accelerated by investment in CPU, RAM and LCD technology. Overseas production, too, has grown steadily in recent years.

The vast majority of PC firms are located in northern Taiwan. A concentration of competitors, suppliers and universities tends to facilitate open information flow and creates efficient and early access to the most cost-effective inputs. The engineering transformation in the industry is substantial. The industry has been one of the major employers of engineers. It is also typical that PC firms have been led by engineers. In comparison with those of the US, Taiwan's engineers are low paid⁵, draw more bright education output from schools, but have less power in the enterprise. In particular, the high flow of engineering manpower impels the technical knowledge diffusion very quickly and the result is a lot of small PC firms.

⁵Taiwan's junior engineers typically earn US\$15,000 a year, only about one-third as much as their U.S. counterparts (*Economic Daily Newspaper*, 28 Jan. 1994: 12; Kraar, 8 Aug. 1994).

The industry is also an enabling industry. It is true that the PC industry corporations are not the only exporting firms that have had international success. A considerable part of the other corporations operate as suppliers to the PC industry. Monitors, together with PC system itself, are the two major export forces. In 1993, 13 million colour and monochrome monitors accounted for 51 per cent of the global market share. Mainboards or motherboards, the highest items of production among all Taiwan-made computer components, accounted for roughly 83 per cent of world total production, with the top two companies - FIC and Elitegroup - alone boasting over 25 per cent (TCA, 1993: 312). The specialised Taiwan input devices include keyboard, scanners and mice/trackballs⁶, which supply about (respectively) 49, 50 and 80 per cent of the world market in 1993. Other products such as add-on cards, terminal and power supplies are likewise highly competitive on a world scale (Table 6.2).

Table 6.2 Achievement of information products in Taiwan (unit: 1,000 sets)

Rank	Products	1990	1991	1992	1993 Domestic production	1993 Global total production	Global Market Share (1993)
1	Monitor	8,234	9,810	11,070	13,304	17,485	51%
2	Microcomputer	2,295	2,653	2,801	3,584	N.A. ⁷	10%
3	Mainboard	4,530	4,446	5,963	9,133	12,338	83%
4	Terminal	1,394	1,016	1,560	1,400	1,400	24%
5	Graphic Card	5,900	6,780	6,230	7,140	N.A.	31%
6	Power Supply	8,499	9,900	10,500	11,460	211,190	30%
7	Image Scanner	441	1,385	694	953	953	55%
8	Network Card	N.A.	1,648	2,755	3,810	3,810	27%
9	Mouse	10,500	14,500	15,117	19,669	22,100	80%
10	Keyboard	10,370	5,500	8,850	6,025	18,830	49%

Source: III (1990-1993) *Yearbook for Information Industry*. Taipei.

⁶In the area of mice/trackballs, Logitech is the biggest company in the world. Its customers include IBM, DEC, H.P., Apple and SUN Microsystems (*Electronic Business Asia*, June 1991; Johnstone, 9 Aug. 1990).

⁷The figures of global productions for microcomputer and graphic card are not available till the end of February, 1993. Therefore the market shares for the two products are based on the estimation of MIC, III.

However, although the PC industry had spurred the development of a wide range of related sectors, the CPU, LCD of Notebook, printer and HDD remained four missing links among Taiwanese IT hardware products. As indicated in the previous chapter, Intel dominates the global supply of CPUs; whereas, though Taiwan had overtaken Japan to become the second largest exporter of notebook PCs after the US by 1993, its LCD sources remain heavily reliant on the supply from Japan⁸. The domestic printer sector has been dominated by Japan and the US products, with Japan accounting for about 78 per cent of imports and the US 15 per cent in 1992. The local HDD industry, too, has failed to flourish⁹, with 70 per cent of domestic demand being imported from Singapore. In addition to hardware industries, Taiwanese software companies have acquired only a limited share of the market in the Chinese application packages and game software, leaving the system software to be dominated by the US firms such as Microsoft and Lotus. The list below summarises this overview of the Taiwanese PC industry.

Table 6.3 The general character of the Taiwanese PC industry

-
- * Listed as a strategic industry in the 1980s;
 - * Fragmented, dynamic, innovative, highly competitive and quick learning;
 - * Export-oriented; mostly concentrating on northern Taiwan;
 - * Mostly focus on OEM, but some own-brand products exist;
 - * The engineering professional dominates;
 - * Around a lot of related industries,
 - some succeed - e.g. monitors, motherboard and input devices
 - some fail; some key parts of PCs - e.g. CPU, LCD and HDD - rely on foreign suppliers
-

⁸Taiwan's reliance on foreign components has long been a contentious trade issue with Japan. For example, Taiwan's US\$7.7 billion trade deficit with Japan was heavily weighted with electronic goods (Brown, 1991).

⁹In 1991 when the research started, there were four major firms of HDDs. But by 1993 only one still survived, and it had dipped into losses, too.


To conclude, the Taiwanese PC computer industry is very much diversified and complicated. For example, it is generally considered one of the success stories of the world computer business (e.g. Kraar, 8 Aug. 1994), but this success is limited to the areas of monitors, motherboards, PC platforms, input devices and so on. Firms' choice of strategy is pluralistic, as some firms pursue more the own-brand strategy while others focus on subcontracting activities. In the next section, the implications of this will be further discussed through a conceptual description of the "industry system" in which the patterning of policy style, business recipe and technology paradigm takes place.

6.3 THE ANALYSIS OF INDUSTRY SYSTEM

6.3.1 The Patterning of Social Structures

In order to examine the significance of social conflicts in structuring firm behaviour, I suggest that there is an industry system whose institutional sources are policy style, business recipe and technology paradigm, all interconnected and each capable of generating different social rules and resources for guiding and empowering firms' behaviour. According to Giddens (1984), a social system refers to the clustering or patterning of social structures. Conforming to his ideas of social system, I suggest that the emergence of an industry represents a type of social formation. This formation leads to the construction of a social system which is produced by the intersection of the structures of policy style, business recipe and technology paradigm. Each of the structures is critical to explaining the formation of an industry. Relatedly, all three of these structures refer individually to a variety of institutionalised patterns that come together in a given social locale to drive economic activities in a particular industry. Overall, then, the organisation of the industry can be seen as an industry system in

which social relations are reproduced and reinterpreted through the patterning of structures.



In practice, the formation of a local industry is normally triggered by one of the social agents - the state, local firms or industry operators - relevant to the three social structures. In 1974, the set-up of Mitac, for example, originated the development of the Taiwanese information industry. Once begun, the evolution of an industry is set in motion and competitors are attracted, social structures become significant, and patterning between the structures constantly takes place. The formation of an industry system is thus a never-ending process, not a static, once-and-for-all integration. Each industry system is unique, with its own evolutionary path. But this path can be better understood if we examine particular industries in particular countries.

The Taiwanese PC industry, for example, grew initially out of the island's consumer electronics industry which was long dependent on the pool of SMEs prevailing in the Taiwanese business recipe (cf. Wade, 1990: 103-8). Relatedly, ever since it was selected as one of the strategic industries in 1980, the industry has benefited from the national policy style in which "the state was the contrapuntal partner to the market system, helping to insure that resources went into industries important for future growth...including...new export sectors such as electronics" (Wade, 1990: 110)¹⁰. On top of these influences from the national context, the Taiwanese PC industry is also continuously shaped by the world-wide technological forces of the microcomputer industry as a whole.

At its core, the evolution of an industry is structurally-connected. Each of the structures is mutually connected because the effect of one is often contingent on the state of others. The nature of Taiwanese PC firms, for example, would not have led to

¹⁰For a fuller discussion of the role of the state in the Taiwanese PC industry, see Appendix 4 - Statutory bodies: ITRI and III.

competitive advantage in PC assembly if the KMT state had not shut down all TV game machines in 1981. The abundant bank loans and government subsidies were not translated into assets for Taiwan's PC industry until the state chose the industry as one of the strategic industries. Taiwan's highly fragmented and diversified modes of market organisation did not constrain the industry's potential for advancement and upgrading because they are well-fitted to the open systems and quick technological diffusion rules of microcomputers. The PC price wars of the past few years, which established enduring demand for ever more economical models, have helped make the Taiwan production mode indispensable for PC firms. In order to compete in a price as well as quality sensitive market, these PC giants see Taiwan as the place to contract for major components at cut-rate prices. Thus, the process of creating competitive advantage is one in which co-evolving activities between policy style, business recipe and technology paradigm are important to industry evolution. Furthermore, each of these three structures works through contingency and inter-dependence, not in isolation with one another.

The industry system in this sense is open because the patterning of the structures constantly leads us to different system outcomes. As in the case of PCs, for example, the same PC technology paradigm can be interpreted differently in different local industry systems according to its interaction with other present social structures of policy style and business recipe. The comparison between Taiwan and Korea can illustrate this point. In 1985, XT-compatible PC production was a mature industry and the Koreans went into mass production, leading Taiwan in terms of units and profits. In 1986, the market quickly switched to AT products which definitively overthrew the Koreans' strategies of mass production efficiency. The Koreans' PCs were left out. Since then Taiwan took over by virtue of the mutual reinforcement between KMT's vast corps of technocrats and Taiwanese family-owned business entrepreneurs whose networks are a source of flexible production and technical learning. Apparently, in an environment where uncertainty is prevalent, success seems to depend "not on right

choice but flexibility in moving from one right choice to another quickly enough"¹¹. As Pollar (1992: 50) implies, technological change alone will not define an industrial revolution, but the present one certainly brought other social values which may well turn out to be as profound as those of the first one. For the Korean PC industry, clearly the existing *Chaebol* organisations, typical of its business recipe, failed to accord with the rules of open systems and radical product change, typical of the PC technology paradigm. While world-wide technology paradigm can allow shifts in competitive advantage in an industry, the intersection of national policy style and business recipe plays an important role in determining which nation can exploit it.

Additionally, it is worthy noting that the systemic patterning of the PC industry is not all determining, as this patterning may result in internally contested logics. These logics may conflict with one another, thus inducing institutional pressures which firms have to manage. There are three obvious examples to illustrate the existence of conflicting logics in the Taiwanese PC industry system. First, the choice of innovation represents a fairly standard case that exhibits critically conflicting institutional ties facing Taiwanese PC firms. As is noted in the previous chapter, the respect for I.P.R. is a dominant rule in the PC technology paradigm. But conformity to this rule of the game certainly conflicts sharply with part of Taiwanese business recipe: the industry has been long regarded as one of the worst offenders of intellectual-property rights because of weak legal protection, erratic enforcement, and a high level of skill on the part of pirates (Clifford, 8 Oct. 1992; Gwynne, Jan/Feb 1993). Therefore, in the system of the Taiwanese PC industry, conflicts arising from I.P.R both in Taiwanese business recipe and PC technology paradigm at least serve to distance the one from the other.

Secondly, the state policy rule of own-brand marketing conflicts with business rule of OEMs, so resulting in an important strategic choice facing Taiwanese PC firms, just as Figure 6.1 shows (see page 135). Accordingly, some firms pursue more the

¹¹Interview with T.C. Tu, director for MIC, III (Kraar, 8 Aug. 1994: 51).

own-brand strategy, while others focus on OEM activities. By adopting an own-brand strategy, firms are legitimate in the nation state, and so can get access to a bundle of policy style resources. However, the own-brand strategy is discouraged by the business recipe which is only supportive of OEMs. Consequently, own-brand firms deny themselves access to business recipe resources.

Thirdly, the policy and technology rules of technology venture/strategic alliance coincide, but conflict with the business recipe, so providing a clear choice. As discussed in the previous chapter, the Taiwanese business recipe provides rules that indicate an opportunistic relationship and short-term commitments between specific business partners. Tensions between policy style, business recipe and technology paradigm thus provide a dilemma for firms in purchasing strategy - a dilemma between diversification of component sources and supplier loyalty. In the case of CPUs, for example, some Taiwanese firms (e.g. Twinhead) have diversified their CPU sources, while others (e.g. Acer and Mitac) depend upon long-term contracts with Intel (Brown, Sep. 1991: 77-8; Ristelhueber, Sep. 1993: 58). The implication of these conflicts for strategic choices will be further discussed in the next section.

6.3.2 Connecting Macro/Meso and Micro Processes

By integrating the social structures into patterning, I suggest a new concept of industry system which is collectively made up of policy style, business recipe and technology paradigm. The concept of industry system highlights the significance of conflict in explaining firm behaviour. This internal systemic conflict, of course, creates institutional pressures which impinge upon the activities of economic actors who operate within the same system. This perspective of systemic conflict thus provides an opportunity for examining *what firms do* in response to institutional pressures. Now because of the reference to action, we move from social structures through industry system to the analysis of individual firms themselves.

In turning from macro- or meso-levels to micro-level analysis, it is worthwhile emphasising that society is not all "smart", while organisations are not quite "dumb" (cf. DiMaggio and Powell, 1983: 78). As Giddens (1984) asserts, society is the product of the human activity it makes possible. As social actors, human beings are "highly learned in respect of knowledge" which they possess, and apply, in the production and reproduction of social life (Giddens, 1984: 22). It logically follows, from the fundamental insights, that all social agents retain an assumed capacity to negotiate conflicts in the ongoing course of social events.

This point is reinforced by analysing the structural resources that enable firms to deploy a range of causal behaviour. As noted in the previous chapter, firms have access to a plurality of social rules of conduct and right over resources available for action. It is this plurality that frees firms from environmental determination and "provides the range of options that permits genuine choice" (Whittington, 1989: 88). In particular, firms' capacity to choose between alternatives is constituted structurally in relation to other agents, as the social resources they have available are ultimately a matter of competition. Consequently, in order to receive legitimation, firms are expected to compete with one another and hence have access to an acknowledged claim on social resources (Bauman, 1990: 118-9; Scott, 1991: 169-70). From this perspective, firms in the tripartite structural formation of an industry "are seen as part of a set of intertwined relationships with other entities" within the industry system (Shearman and Burrell, 1987: 328). This research, therefore, stresses the significance of individual firms in understanding the nature of modern market economies.

It is obvious that much theory and research seeking to explain the economic performance of nation states fails to take account of individual firms. Naturally, one tends to look upon industries as the basic unit of analysis for international competition (e.g. Porter, 1990: 34). If the ways that industries create and sustain competitive

advantage in the markets provide the necessary foundation for understanding the nature of international competition in the process, then analysis at the firm level should not go by default. However, it is my view that the prevailing characterisation of macro (nation states) or meso (industries) approaches to market economies are too restrictive and that this restriction has obscured certain conditions essential for an adequate account of competitiveness. Indeed, industries within societies are not quite real. From the perspective of individual industries, they are made up of different mixes of firms whose diversity "is an essential aspect of the processes that create economic progress" (Nelson, 1991: 72). In other words, industrial success is based on the behaviour of firms.

In modern economies, firms within the same industry do differ from one another. Economists have studied the functioning of industry, but at once tended to play down firm differences. Sociologists have studied the functioning of organisation, but only a few have matched the firm's unique identities to the immediate society that determine its economic outcomes. While recognising the significance of this neglect, this thesis argues that individual firms are at the heart of our inquiry about how "different kinds of business organisations and economic rationalities develop and become effective in different institutional contexts" (Whitley, 1992a: 1). Certainly, the details of firms' individual behaviour cannot be studied at the industrial level. As Whittington (1993, 1994) has recently argued, the linkage between the firm and its attendant society is essential to explaining firm behaviour. As we shall see later in my case firm studies, the structural sources of power are unique to each company. The uniqueness is a product of the firm's identities which provide institutional links to its immediate social structures of policy style, business recipe and technology paradigm. The identities, while offering a linkage between structure and agency, give the firm not only resources empowering its action but also institutional links related to rules that govern or constrain its action. It is through this linkage that we examine how firms,

with access to a variety of social rules and resources, can make a difference to their strategic choices.

6.4 BUSINESS ORGANISATIONS

As I repeatedly stress in the thesis, firms within the same industry are different from one another. They are socially structured with different links to their immediate social structures including policy style, business recipe and technology paradigm. These differences constitute their peculiar identities that will cause firms to make strategies differently. While the industry system is made up with a mix of economic actors, we may observe a certain similarity and difference with reference to their social positions in the industry.

always?

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In my case study here, the Taiwanese PC industry comprises a lot of firms. Actually, its business organisations are diversified and highly fragmented. The industry has over 5,000¹² hardware manufacturers, largely small- and medium-sized enterprises, producing PCs and components mostly on an OEM basis. Within this industry, there are about 250 firms manufacturing microcomputer integrated systems and the top 20 Taiwanese manufacturers have a combined market share of 56 percent (Chern, 1991)¹³. However, it is possible to observe some elements of similarity (cf. Schive and Hsueh, 1987: 135-7; Chern, 1991: 4-5).

To begin with their links to Taiwanese policy style, some firms are PLCs (publicly listed companies), and, therefore, able to draw upon the financial resources of the stockmarket to empower their actions. These firms include Tatung, Acer, Mitac,

¹²This figure refers to the members of Taipei Computer Association, the biggest association of the computer industry. See TCA (1993: 4).

¹³By 1993, there were 182 desktop PC vendors who were members of TCA (TCA, 1993: 268-74).

FIC, Compal and so on. Just as the PLCs have, some PC firms have demonstrated a relatively high connection to the policy style because of its shareholders including the state or the KMT business group. Twinhead, for example, is owned by a set of diversified shareholders that include venture capitalists, state-operated banks and a KMT-owned firm.

Considering now their links to Taiwanese business recipe, most of the firms operating in the industry share a common position as Chinese family businesses. However, the industry also comprises some firms which are set up by large multinational firms through direct foreign investment. For example, in 1987 AST of the US set up Taiwan AST in the HSIP to produce PCs which mostly are shipped to its US-based home company (III, 1991a: 66). In 1993, DEC, the second largest computer company in the world, also invested in a subsidiary in Taiwan to assemble PCs.

Some firms - such as Tatung, Sampo, FIC, Mitac and Compal - are related to business groups, while others - such as ASI, Clevo and AUVA - are owned by single forms of family business. Tatung, for example, with more than 70 years in the home appliance business, started its PC business in 1980 with sales of its own brand products and later began to focus on OEM orders. Mitac was created in 1974 partly as the result of Matthew Miao's desire to have his own firm outside of his parents' chemical and financial empire - the Lien-hua conglomerate. Other examples are FIC whose founder (Dr. Ming-jen Chien) is the son-in-law of the chairman of the Formosa group; the newly formed Sampo Technology which used to be a branch of Sampo Home Appliance Company; and Compal which was created by the Cal-Comp business group, one of the longest lived indigenous conglomerates in the economy.

With respect to single forms of family business, ASI, for example, was founded by Paul Liu who used to be an English teacher and managed his own travel agency. AUVA was basically the result of a merger through a marriage of Chris Yang - its

president - and Annie Tsao - its chairman. Originating from brick manufacturing, Clevo is owned by the Hsu family. As discussed in the previous chapter, in comparison with the single forms of family business, the business-group firms - such as Tatung, Sampo, Mitac, FIC and Compal - demonstrate a relatively high level of business relations and so have the advantages of exploiting business recipe resources on their behalf.

Finally, partly through business contracts and personal relationships, partly through cross-equity holding, some firms have developed long-term relationships with leading US PC firms or Japanese LCD suppliers, hence increasing their connections to the technology paradigm. For example, Mitac and Acer, the two largest PC firms, in particular have special relationships with Intel with subsidiaries of both acting as Intel distributors. In particular, Mitac's chairman - Matthew Miao - is a close friend of Intel's president and CEO - Andy Grove. One of AUVA's substantial shareholders is a US PC firm. Compal's parent company - Cal-Comp - has a good relationship with Japanese suppliers for reasons of its long operating history in the society.

As discussed above, although these firms all operate in the system of the Taiwanese PC industry, they differ markedly in terms of their links to the three social structures. As I mainly argued in this thesis, a firms' strategic choice is dependent on its social identities. As a result, because of their different social identities, some firms (e.g. Acer and Twinhead) have pursued more the own-brand route, while others (e.g. FIC, Clevo and Compal) have focused on OEM contracts. Because of their different identities, some (e.g. Acer and Mitac) have maintained a stable subcontracting relationship with Intel, while others (e.g. FIC, ASI and AUVA) have diversified their CPU sources. Because of their different identities, some (e.g. FIC and ASI) have started their overseas production in China, while others (e.g. Twinhead) have simply operated their factories in Taiwan. Because of their different identities, some (e.g. ASI and AUVA) have pursued opportunistic diversification strategies, while others (e.g. Acer and Elitegroup) have pursued integration growth strategies. More or less, every

individual firm provides strategic differences within the industry system where they compete and co-operate. From here, a more detailed description of corporate identities of my nine case study firms will be examined in the next chapter.

6.5 CONCLUSION

I have so far introduced two concepts of my theory - social structure and industry system. The industry system is understood as a social formation with social structures - policy style, business recipe and technology paradigm - patterning in a certain way. In this chapter I reviewed the system of the Taiwanese PC industry in these terms.

Overall, I began this chapter by introducing the general character of the industry. The industry is dominated by engineering professionals. It is fragmented, but dynamic, competitive and quick learning. Export-oriented, the industry comprises a lot of small and medium firms. Most of these firms focus on OEM, but some own-brand products exist. Though considered successful, the industry relies heavily on foreign supplies of CPU, HDD, operating systems and so on. By examining the patterning modes of the three social structures, I have argued that the industry system may exhibit internally conflicting logics which will impinge social pressures on firms' action. In order to negotiate the systemic conflict, firms have to choose to conform to certain social structures with rules of conduct and right to resources available. Here, choice is possible, because in the industry system there is more than one social structure providing social rules and resources for guiding and empowering firm behaviour. To summarise, in this chapter I argue that neither macro (nation states) nor meso (industries) approaches give a full appreciation of an equally significant analytical dimension - that of the "individual firm" itself. This sets the scene for the next chapter in which I shall explore the corporate identities that help explain firms' strategic choices.

CHAPTER SEVEN: CORPORATE IDENTITIES

7.1 INTRODUCTION

In Chapter 6 I introduced a concept of industry system by examining the organisation of the Taiwanese PC industry. On the basis of my tripartite structural theory of strategy, I argue that the development of the industry illustrates the patterning of three social structures - policy style, business recipe and technology paradigm - introduced in Chapter 5. The patterning of the three structures highlights the significance of systemic conflicts in explaining firms' behaviour. Given the particular structural links that underlie their actions, firms will respond differently to the system in order to negotiate the conflicts. In particular, the structural links construct firms' social identities, to which a range of social rules and resources is attached in a network of social relations and forces, critical to strategic choices. In order to examine how firms took divergent actions, I shall therefore now examine the third concept of my theory - corporate identities, linking strategic choices with industry system and social structures.

As discussed in Chapter 4, nine Taiwanese PC firms are chosen for study (see Table 7.1). In this chapter, I shall establish the broad similarity and differences of their social identities in the industry system. In Chapter 5, I have identified some significant criteria for examining firms' structural links that constitute their particular identities (see Table 5.2, page 77). With respect to policy style, these criteria include (1) connection to the KMT chairman, (2) education of owner-managers, (3) connection to the KMT business group, (4) stock-exchange listing and (5) ethnicity. With respect to business recipe, they include (1) purely familial management, (2) business-groups firms and single form of family business and (3) personal relations and education of owner-managers. With respect to technology paradigm, they include (1) US degrees, (2)

Table 7.1 The case PC companies

Company; Start date	Key personnel	Ownership status	Start-up mode	Main products
Acer (9/1976)	Stan Shih	PLC; Shih's family own 9%	Local entrepreneur; Electronic trading business	Highly integrated
Mitac (1974; 1982)	Matthew Miao	PLC; Miao's family controlled	related to Lien-hua business group (mainlander); Intel sales representative	Integrated
FIC (1980)	Ming-jen Chien	PLC; Chien's family own more than 50%	related to Formosa business group	Motherboards
ASI (5/1983)	Paul Liu (before mid- 1993)	Family owned	Local entrepreneur; Travel agency; electronic trading business	Desktop PCs; Motherboards;
Clevo (10/1983)	Kent Hsu	Family owned and controlled	Local entrepreneur; From brick business	Notebook PCs
Twinhead (2/1984)	Stanley Chiang; Charles Chen (before 1992)	Joint venture with venture capital, bank, a KMT subsidiary and young professionals; Chiang own 9%	Local entrepreneur; Electronic trading firm	Notebook PCs
Compal (6/1984)	Rock Hsu; Ray Chen	PLC; family controlled	a subsidiary of Cal-Comp business group	Notebook PCs
AUVA (1985)	Chris Yang; Annie Tsao	Family owned 25%	Local entrepreneur; A merger of two firms	Loosely integrated
Elitegroup (1987)	Thomas Chen; Dr Frank Huang (after 1993)	Joint ventures with 7 Acer's former employees	Local entrepreneur; Split from Acer	Motherboards

contracting or investment linkages and (3) long-standing component supply. Bearing these points in mind, I will now discuss social identities of my case PC firms.

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In each case, I will begin by briefly introducing the company history, their product range, company sites and ownership status. I will then continue to explore their top management, owners and their positions in political, business and technological networks. All these elements contributed to constructing their individual identities, during the period 1987-1993. As can be seen in Table 7.1, by 1987, all my case firms were in existence. Therefore, my analysis of corporate identities from 1987 to 1993 can provide a comparative basis. In the light of these identities, I shall describe the various strategic choices that my case firms made in the next chapter. First, however, I want to preview my discussion with a table that summarises my comparative analysis of social identities for the nine case firms (see Table 7.2). Throughout this chapter, my aim will be to make sense of this table so that I can integrate it subsequently into the analysis of strategic choices. In addition to the individual discussion of each case, Table 7.2 *as a whole* will be further examined after I finish introducing the nine case firms.

Table 7.2 Corporate identities: firms' structural links with social structures (1987-93)

	Policy style	Business recipe	Technology paradigm
Acer	Extremely high	Medium	Medium-high
Mitac	Medium-high	High	High
FIC	Low-medium	Extremely high	Medium-high
ASI	Low	Low	Low
Clevo	Low	Medium	Medium
Twinhead	high	Medium	Medium
Compal	Low-medium	High	Medium
AUVA	Low-medium	Medium	Low-medium
Elitegroup	Low (high after 1993)	Medium	Medium

In all the following case studies (chapters nine to eleven), all quotations are verbatim tape recorded statements with the anonymity of the speaker preserved, except that where statements are quoted from published material a source will be mentioned. The particular status of a speaker is usually specified only when it is important to distinguish between successive quotations; or when the speaker's position is significant to the interpretation of the quotation.

7.2 CASE 1: ACER

In 1976 Acer, formerly known as Multitech¹, was set up by Stan Shih and four others, with an initial capital of NT\$1 million². Like the other case firms Twinhead and AUVA, it started out as a components trading company and gradually expanded into systems development. With a few years of working experience as small local parts suppliers, Shih and his partners began selling ICs, "delivering them personally by motorbike at a time when Taiwan had no PC market and was just beginning to sell notorious pirated Apple clones"³. By the middle of 1980s, the company had become the largest PC firm in Taiwan and one of the major suppliers in the world. It began making monitors in 1983, keyboards in 1985, ASICs in 1986 and motherboards in 1993. By 1993, the Acer group had developed to be a large diversified holding company with business spread through some 14 subsidiaries, each fragmented into separate business units and financially independent. These regional and strategic business units include a peripheral subsidiary, a high-technology venture capital company, a publishing company, a value-added network services company and so on.

¹The name of Acer was created in 1988 when an unrelated US firm named Multitech disputed the Taiwanese firm's right to market products with the name in the US.

² There are two books outlining the history of Acer, both written in Chinese; See Wang (1988) and Shih (1989). I also draw on *Asian Finance* (1988), Clifford (1993), Dubashi (1991), *Economist* (1992), Engardio (1993), Johnstone (1993), Moore (1988), Roy (1989), Shao (1987), Welt (1987) and Whiting (1993).

³Quoted from an interview with an industrial analyst, June, 1993.

Allied to these, the company is also involved in trading business, with Acer Sertek acting as Taiwanese distributors for some major US IT firms' software and engineering equipment. In addition to owning two main plants in Taiwan, one for PC systems and the other for peripherals, the company has extended its overseas production to include activities in Malaysia, Holland and the US. The Malaysian plant in Penang produces peripherals such as colour monitors and keyboards, while the factories in Holland and the US assemble PCs with major parts shipped from Taiwan. By the middle of 1993, it had 52 offices in 16 countries with a network of more than 100 distributors and 10,000 dealers operating in 70 countries. Overall, then, partly because of its long operating history in the industry and partly because of its subsidiary acting as Intel's sales agents in Taiwan, the company possessed a relatively high connection to the PC technology paradigm.

In its early history, the company secured a significant financial source from a local construction business group which has remained a major shareholder of Acer. Certainly, this financial linkage partly reinforced its connection to the business recipe. In 1988, it became the first publicly floated PC firm and so considerably connected itself with part of the policy style. But since going public, its profits declined sharply (*Economist*, 1 Feb. 1992: 78), suffering heavy losses in 1991 and 1992. Its Eurobond, which was launched in 1991 with a total value of \$45 million, was once floated under its face value in the London market. In 1992, in order to solve its huge deficit, the company raised about NT\$500 million by selling land and shares in its affiliates. However, by 1993, the enormous revenues from its DRAM joint venture with TI and the expanding of OEM business had turned Acer again into profit. By the end of February, 1994, its stock prices trebled from its December low of NT\$15 (Clifford, 4 March 1993).

Holding a master degree in Electrical Engineering (E.E.) from the highly reputed Chiaotung University, Stan Shih, the CEO of Acer group, and his wife Carolyn

Yeh, are among Acer's original founders and together with other family members hold nearly 9 per cent of the company's stock. Surprisingly, in a recent disclosure of high-level government officials' assets, the President of Taiwan, R.O.C., Dr. Lee holds 520,000 shares of Acer's stocks (*PC Week Taiwan*, 18 Oct. 1993: 4). Obviously, it is impossible for the President to buy these shares from the open market after his inauguration; thus, Dr. Lee has been for a long time one of the major share-holders of Acer, before it became a PLC.

As is well-known in the industry, the company's strategy over the years cannot be understood without appreciating Stan Shih's entrepreneurial style, and his strong personal commitment to, and patriotic enthusiasm for, the development of the industry. The "rags-to-riches" story of Stan Shih, home-grown Taiwanese and the son of a hawker, and his expanding PC empire, parallel the story of Taiwan's information industry. As a native business elite, he has benefited from the rise of "*Taiwanisation*" of the KMT party-state. Partly as a result, Stan Shih is the first, and until now the only, business person to be invited by the President of the Republic (Dr. Lee Teng-hui) to make a speech to government officials in the Presidential office. He acted as the first chairman for the Taipei Computer Association (TCA) from 1984 to 1989, and on several occasions was awarded the title of the Model of Young Professional Entrepreneur. Moreover, in 1987, he was appointed as the sole industry representative of the board of directors of ITRI. Over the years, Stan Shih of Acer has been the best known industrial spokesman of IT in Taiwan. In general, largely because of its connection with the President Dr. Lee and partly because of its connection with the stockmarket, ITRI and other state institutions, Acer's connection to the policy style was considerably higher than the other eight case firms.

Accordingly, as we shall see in the next chapter, the creation of Acer's empire depends largely upon policy style resources to inspire Stan Shih's rash decision to enact its global strategy. Because the company is Taiwan's leading PC firm, it benefits much

from a political system which has dreamt of creating a Taiwanese IBM in order to help compensate for its political isolation while underpinning its effort towards international recognition. Like ICL of Britain, Nixdorf and Siemens of Germany and Olivetti of Italy (Hendry, 1989; McClellan, 1984), Acer enjoys a policy-driven competitive advantage over its domestic rivals.

7.3 CASE 2: MITAC

One of the oldest players in the Taiwanese information industry, the Mitac Group began in 1974 with Mitac Inc., acting as Intel's sales representative in Taiwan⁴. In 1982, in order to grasp the booming PC market opportunity following the radical competition between Apple and IBM, Mitac International Corporation, the case firm, was founded as the manufacturing arm of the Mitac group. It had enjoyed rapid growth and high profits throughout the 1980s and was publicly quoted in 1990. Its manufacturing activities were built at its main HSIP factory as well as UK and US subsidiaries. PC system business was roughly split between own-brand and OEM equally. Unlike its rival Acer which proceeded with a series of hostile take-overs during the late 1980s, Mitac did not over-expand its activities through overseas investment. But starting in 1989 when the PC industry faced declining profitability and increasing hostility, diversification and acquisition activities at Mitac were intensified. Apart from being a system integrator and distributor for international IT firms in Taiwan, the parent Mitac group has steadily developed. Its business activities now span defence electronics, communications, terminals and distribution channels. In 1992, it was ranked No. 91 in Datamation's top 100 IS companies. However, although it had made marked rapid growth through this series of integration and diversification initiatives, Mitac's performance declined sharply. By 1992, it had fallen into huge

⁴Much of the material to follow comes from my interviews with Mitac's managers and the company's annual reports.

losses, thought to be half of its capital. At the end of 1993, top management was restructured. Francis Tsai, the executive vice president, took over C.S. Ho's presidential work. Head office was also purged but the boards were retained.

In essence, top management at Mitac was highly professional. Although C.S. Ho, a former H.P. engineer, is excluded from the principal executive job, he still acts as the chairman of Taipei Computer Association and was given the post of the "vice chairman" of Mitac. Matthew Miao, the chairman, who joined Mitac Inc. by virtue of Intel's connection, is the most important strategic decision-maker. Unlike other case firms' entrepreneurs, Matthew Miao was educated overseas from early childhood. Miao's intense interest in computing dates back to the early 1970s, when he worked in California for the newly formed Intel Corporation. After graduating from the University of California, at Berkeley, he designed chips for a time at Intel. Miao is still a close friend of Intel's president Andy Grove. Partly as a result, Mitac was much like a "foreign PC firm", demonstrating a relatively higher connection to the technology paradigm than its domestic rivals.

In comparison with Acer, Mitac also showed a relatively higher connection to the business recipe because of its identity as a business-group firm. Its chairman - Matthew Miao - is the son of Yuh-shiou Miao, one of the leaders of the "Sun-tung (a province in the North-east of Mainland China) business gang"⁵, and is taking charge of his family's various business interests. Notably, within my case study firms, Mitac is the sole firm which is controlled by a mainlander entrepreneur. Given this ethnic identity, it is not surprising that the Mitac group has diversified its activities to include business in defence electronics outside the immediate PC industry which has attracted many Taiwanese entrepreneurs. In Taiwan, defence has always been privileged preserve for mainlanders. In turn, however, the mainlander ethnicity also imposes certain

⁵In a survey of one local business magazine (*Excellent*, Aug. 1993) Yuh-shiou Miao was ranked as the 39th richest person in Taiwan.

constraints upon Mitac in the competition for political advantage over its rival Acer, whose political agency is partly built by the rise of "*Taiwanisation*" of the KMT party-state. So Mitac may enjoy a competitive advantage over Acer in the access to business recipe resources, but may be at a competitive disadvantage in the access to policy style resources. However, in considering its connection with the policy style, Mitac's identity as a PLC, its mainlander ethnicity and business connections with the defence industry still considerably associate this company with the policy style.

In contrast to Acer's Stan Shih who "spent every moment building the only thing he knows", Matthew Miao created Mitac in "moonlighting stretches between shifts working for the family's chemical and financial empire". As one industry observer acknowledged, "at company management, Miao was more like a delegator because he had other business to tend, leaning Mitac on (former) president C.S. Ho and other corporate officers to get things done and report to him". Indeed, although Mitac's shares are mostly controlled by the owning Miao families, partly through the control of the obligations of kinship and partly through imposing subsidiary shareholding, they are inclined to delegate decision-making to managers who have developed long-term personal ties to Miao.

However, with regard to Mitac, corporate strategies were obviously influenced by Miao's personal interests and his responsibilities for effectively mobilising family resources. This emphasis on the protection of family interests constrained opportunistic take-overs of different kinds of industrial activities, such as those pursued by Acer. Concern to protect family interests also led the company to maintain tight control over its financial management. Unlike that of Acer, Mitac's managerial philosophy was thus one of cautiously safeguarding company survival instead of reckless pursuit of growth. However, this emphasis on business recipe-driven strategy constantly led the company to face systemic tensions, as its connections to policy style and technology paradigm are also high. As we shall see in the following chapter, Mitac's choices of strategy

mostly came from searching for balance between policy style, business recipe and technology paradigm.

7.4 CASE 3: FIC (FIRST INTERNATIONAL COMPUTER)

In 1980, FIC was originally set up as the U.S. Prime minicomputer sales representative in Taiwan⁶. In 1983, under the brand of LEO the PC division was created primarily for the local market, which currently accounts for roughly 90 per cent of total company revenue. Apart from motherboards, PC systems and add-on cards, it also operates in factory automation, semiconductor development, banking information service and minicomputers distribution. It was publicly floated in 1991 with its stock price persistently higher than its rival electronic firms. Performance was constant. It started overseas production in mainland China in 1991, but its PC business was nevertheless built at its Hsien-tien and two Lin-kuo factories which were on land supplied by Nan-ya, a subsidiary of the Formosa group. Situating its headquarters in the building of the Formosa empire and two major factories in the Nan-ya plant, FIC is certainly likely to apply Formosa's reputation for competing in the domestic market.

The main characteristic of FIC is, of course, its emphasis on strong owner control and its close relationship with Formosa's business group, the largest manufacturing conglomerate of the economy. Dr. Ming-jen Chien (PhD at Berkeley), founder and chairman, is the son-in-law of Y.C. Wang, the billionaire founder and chairman of Formosa. Prior to the creation of FIC, Dr. Chien used to be an engineer in Bell laboratories and a professor at Wayne State University in the US. Though Formosa's support of FIC was inevitable, the creation of FIC was the result of Dr. Chien's personal desire for independence from the managerial hierarchy within the Formosa conglomerate. Unlike other case firms, power at FIC was extremely

⁶The profile of FIC is based on the company's annual reports and my interviews.

centralised with only three members on the board; apart from Dr. Chien, his wife, Charlene Wang (Master in Statistics at Berkeley) acted as the president, the husband of Charlene Wang's younger sister - Y.C. Ou (MBA at Berkeley) - being the senior vice president. Company shares were mostly owned by the three owner-managers whose connections to Formosa mainly directed the company's growth. In general, largely through the education background and working experience of the owner-managers and partly through its long agentive relationship with Prime Minicomputer, FIC demonstrated a considerable connection to the technology paradigm. On the other hand, in considering its connection to Taiwanese policy style, FIC stood considerably apart from the style, with this connection slightly reinforced by its identity as a PLC.

Consistently with Formosa's style, FIC was basically production-oriented, emphasising volume expansion. Pursuit of cost leadership was facilitated by membership of the Formosa group whose manufacturing management and equipment prevailed over the organisation. In a capital market which did not favour small firms and relied heavily on tangible asset debts, being the "son-in-law of Y.C. Wang" was definitely an asset. Unlike Acer's Stan Shih who depends on "self-advertisement and state idealism" to underpin his action, Dr. Chien has an "assured charisma" to impress on banks, shareholders and exchange partners his inspirational vision. In addition, while competing in the industry, FIC has the advantage of building itself a relatively favourable niche by getting access to its family resources of Formosa's business group. Originally founded as a minicomputer agent company, for example, FIC had at least one large loyal customer in the Formosa group and additional business opportunities through Formosa's relationships with other business partners. This also explains why FIC has the biggest domestic market ratio of its product markets among the case firms, though its main business of OEM-based motherboards is mostly export-oriented.

Overall, then, just as Acer commanded access to policy style resources and Mitac commanded access to technology paradigm resources, FIC showed a relatively

higher connection to the business recipe than the other eight case firms. Actually, Acer, Mitac and FIC were understood to be "the big three" in the Taiwanese PC industry. As we shall see in the next chapter, FIC depended more on the rules of business recipe to drive its action, as its owner-managers had the advantage of access to more business recipe resources.

7.5 CASE 4: ASI (Aquarius System Inc.)

ASI was founded by the brothers, Paul and Tony Liu, in 1983, with an initial capital of NT\$2 million⁷. Before its foundation, Paul Liu was an English teacher and ran a travel agency for years. In 1983, at the age of thirty-five, Paul and his younger brother Tony created ASI with its early operation mainly an exporting agency in PC areas. As overseas business grew constantly, the company began to assemble PCs in 1986, and manufactured mainboards and VGA cards in 1991. Its main PC manufacturing plant was established in Kuan-yin, Taoyuang County. In terms of business management, the two brothers were assigned divided responsibilities, with Paul more involved in the sales, administration and accounts while Tony (whose education background was in chemistry) concentrated on technology, design and factories. Among IT firms, ASI had the distinction of being the sole Taiwanese firm so far to have formed joint ventures with companies in both Germany and Russia. In Germany, ASI held fourth place in the share of the market. In Russia, it claimed that it was once the largest PC brand. Its propensity to venture overseas had been reinforced by the state's political bias in favour of internationalisation. However, from 1990, the company's performance declined. Its technology venture into Russia had become dilapidated. The most important business unit in Germany was facing declining profitability. The main board had also changed in its mode of operation. With a new

⁷For ASI's history, I draw on my interviews, the company's annual reports and the reports by Wu (1992).

chief executive from outside, a corporate turnaround at ASI had quickly to be instigated.

In the industry, ASI was an outsider. Without either a conspicuous engineering background or conglomerate financial support, the company had poor connections to all of the policy style, business recipe and technology paradigm, ASI's strategy was greatly influenced by its founder - Paul Liu - whose cosmopolitan and opportunistic character provided the basis of the company's action. Indeed, according to one of my interviewees, Paul Liu was described as "very speculative....European-oriented... (with respect to computer technology) a layman". As we would expect, the company's idiosyncratic marketing orientation in the European market derived from the professional expertise of Paul Liu with his language education background and his experiences as travelling and trading agents.

Lacking access to strong structural sources of power, ASI certainly found it difficult to compete in the industry. Consequently, in 1992, Paul Liu invited the former vice president of Elitegroup - Jack Huang (a graduate of Taiwan Institute of Technology) - to act as the president in order to start its sub-contract motherboards business. Furthermore, in 1993, the company merged with CAF, a rival PC firm owned by a local business group. Its merger with CAF brought in the new chairman Dr. Huang and since 1994, Paul Liu has been awarded the title of "honourable chairman" with the managerial team not much changed. At the time of writing, it is by no means clear that the merger with CAF has raised the value of ASI. But there are signs that strategic development of this company is being steadily re-shaped by its reinforced connection to the business recipe. As we shall see in the next chapter, the company's strategy has shifted the focus from the former owner's personality and professional association with the European market to the business recipe at large.

7.6 CASE 5: CLEVO (NTC)

Founded in 1983, NTC originally specialised in keyboards⁸. It expanded into manufacturing PC systems in 1987, and diversified into monitor production by establishing a subsidiary in 1992. Like Acer, the company changed its English name from NTC, which had been registered globally by another firm, to Clevo in reflection of its pursuit of internationalisation. About 85 per cent of its keyboards and notebooks were sold to overseas OEM customers, with notebooks accounting for roughly 90 per cent of total turnover. Allied to these, it also has the flexibility to supply a wide range of other peripherals such as case and power-supply. The company divides its keyboard business between two facilities, in Taiwan and Malaysia, whereas notebooks are built mainly at its main Wu-guo plant, in northern Taiwan. In general, by focusing mainly on notebook PC subcontracting business, Clevo has developed a relatively stable relationship with its exchange partners (e.g. IBM, ATARI and DTK), hence partly reinforcing its connection to the technology paradigm.

Although both are categorised as single-unit family businesses, Clevo differs substantially from ASI in many dimensions. Unlike ASI, Clevo is managed by an engineering team, with its founder and chairman - Kent Hsu - notably specialising in R&D. After graduating from Taipei Institute of Technology (TIT), Kent Hsu created Clevo as the result of his interest in electronics and in association with his family's traditional brick manufacturing, which had faced the conflicts between declining demand, environmental protection and labour shortage. The company shares are mostly controlled by Hsu's family. For a long time, Kent Hsu was the sole key person but, since 1988 he has invited the former vice president of Tatung - J.P. Chen - to work as the principal executive. This certainly reinforces Clevo's connection to the business recipe, as Tatung is the biggest consumer electronics company in Taiwan.

⁸Much of the material in this section is based on my interviews and the company's annual reports.

Additionally, Kent Hsu is also the chairman of Chicony - a typical business recipe company, though it competes with Clevo neck and neck on the OEM notebook market. The management of Clevo stemmed mostly from the engineering training from TIT, the best technology institute in Taiwan. Situated in downtown Taipei and very close to the largest grey electronic market of the island, TIT is known as the "cradle of local electronic engineers".

Unlike Acer with its strong reliance on policy style over the creation of strategic resources, Clevo demonstrated a relatively low connection to the state. In turn, the combination of strong family control and local engineering professionals connected the company more with the logic of business recipe, as its strategy was more oriented toward the protection of family business. Overall, then, as we shall see in the next chapter, the company has pursued strategies that largely exclude the influence of policy style.

7.7 CASE 6: TWINHEAD

Established in 1984, Twinhead was created by local professional engineers from Philips⁹. Its main founders - Stanley Chiang and Charles Chen - were classmates at the prestigious Graduate School of Electrical Engineering of Taiwan National University. Before setting up Twinhead, Mr. Chen was the developer of a microprocessor-based teaching kit which he sold to Acer. Built at the founder's home, its early products were mainly innovative but low-cost ASIC chips and add-on cards. It integrated desktop PC assembly in 1987, portable PCs in 1989, and since 1991, committed its main resources to the notebook area. Apart from producing ASIC chips, add-on cards and PC systems, it also runs an R&D centre for workstations at the HSIP, and distributes Sun Microsystems' workstations and Hewlett-Packard's

⁹For Twinhead's history, I draw on the company's annual reports and my personal interviews.

peripherals. Important OEM partners include NCR and Unisys whose business relationships with Twinhead date back to 1989. Overall, then, partly through its relations with both Sun and Hewlett-Packard and partly through its connections with other exchange partners, the company retains a considerable connection to the technology paradigm.

Twinhead differs from the majority of Taiwan's PC companies by having its manufacturing facilities situated in the southern port city of Kaohsiung, though its main office and R&D facilities are located in Hsin-tien, suburban Taipei. Indeed, spin-offs of organisational geography have a tendency to locate near the original company, because entrepreneurs not only live there but have established relationships. For this reason, the founder of Twinhead - Stanley Chiang - located his firm in the area of Kaohsiung where he was born and where he worked for a long time.

From its foundation until 1993, Stanley Chiang and Charles Chen were the key personnel of the company. In the industry, Charles Chen is well-known as having taken the highest rank in the university entrance examination of his time. In this, though both are known as specialists in notebook PC technology, Twinhead provides a sharp contrast to Clevo, with the former driven by the graduates of Taiwan University and the latter led by the TIT professionals. In Taiwan, Taiwan University is the best university and TIT is the best technology institute. Variation in education background certainly made a difference to competition for access to policy style resources. On this point, Twinhead was viewed as more legitimate than Clevo and, as a result, Twinhead was more likely to secure the support of the state. In addition, the education background of Twinhead's owner-managers was certainly an advantage in winning the support of local business elites, hence increasing its connection to the business recipe. However, in early 1993, because of a US debt which turned the company's huge earnings into losses, Mr. Chen left Twinhead and founded a rival notebook PC firm in

a venture with Philips. Since then, Stanley took over Charles' managerial job and has been the chairman-cum-president of the company.

In addition to its founders being the major shareholders, the company is also partly owned by a set of diversified external shareholders that include venture capitalists, state-operated banks and a subsidiary of the KMT business group. These external shareholders accounted for at least 40 per cent of the company's total shares. Obviously, this social identity as partly state-owned connects the company to the policy style in a very strong sense. Partly as a result, strategic development at Twinhead has been very like that of Acer. As we shall see in the following chapter, Twinhead's relatively high connection to the policy style helps explain its peculiar strategies.

7.8 CASE 7: COMPAL

Compal was established in 1984 with a capital of NT\$50 million¹⁰. It is a subsidiary of Cal-Comp, one of the longest lived indigenous conglomerates. The business group was the creation of Chao-yin Hsu, jointly with some Taoyuan bourgeois¹¹ and six young graduates of the Electrical Engineering Department of Taiwan University. By 1993, the Cal-Comp group had grown to be a diversified holding company though its main business is so far mostly related to electronics. It has also diversified into other areas of investment, venture capital, international trade, automation and industrial materials. In 1984, Cal-Comp founded Compal to work mainly in manufacturing and sales of computer peripherals. Given the imperfect legal environment, the separation of Compal from the conglomerate "was simply a strategic

¹⁰Much of the material to follow in this section is based on Compal's annual reports and my interviews with the company's managers.

¹¹They include doctors, scholars and merchants, most of whom had lived through the Japanese colonialist period.

response to tax incentive"¹². Both Cal-Comp and Compal are publicly floated on the Exchange, with many of their assets and resources mutually shared. Compal, the case study firm, was originally built as a 14" specialised colour monitor producer and, in 1990, moved forward integration of notebook system manufacturing. All their products are based on export-oriented OEM contracts.

Like Mitac which loosely separated the ownership and control, Compal was managed by a professional team, though the main board had the final say over strategic investment decisions that determined Compal's future and was the final arbiter of personnel policy. This professional team was led by Ray Chen - its president. Ray Chen is a graduate in Electrical Engineering of National Chengkung University. Before joining Compal, he had worked at Cal-Comp for a long time and so had developed long-term relationships with the Hsu family. Another key person was the chairman's oldest son Rock Hsu who was on the board of directors. Chao-yin Hsu, the honorary chairman of Cal-Comp and chairman of Compal, was educated during the period of Japanese colonialism. Company shares were mostly controlled by the Hsu family, partly through interlocking subsidiary shareholding and partly through reliance on kinship relations for obligatory control. It maintained stable subcontracting relations with suppliers and industrial customers, many of which were Japanese firms. In particular, its LCD sources depended heavily on the long-term development of Cal-Comp in electronics, during which Cal-Comp's managers have grown together, with many of the Japanese executives of the suppliers, since the days when they were all in lower positions for their organisations. In addition, since the group founders were equipped with colonial Japanese education, the company still retained a profoundly Japanese managerial style, summarised as having a paternalist leadership but stressing "lifetime" employment patterns. These Japanese connections, especially privileged access to leading LCD suppliers, reinforced Compal's connections to the technology paradigm, compensating for its lack of American links.

¹²Quoted from an interview with Compal's senior manager.

In sum, partly because of Cal-Comp's relationships with Japanese suppliers and partly because of Cal-Comp's long operating history in the industry, Compal has developed a considerable connection to the PC technology paradigm, particularly that related to Japanese CPU suppliers. However, despite its identify as a PLC that partly associated the company with the policy style, the company retained a largely aloof posture in terms of its relationships with the state. Like Mitac and FIC, the company is a business-group firm and so shows a relatively high connection to the Taiwanese business recipe. Indeed, the social identities of Compal are quite similar to those of FIC, and these similarities have led both firms to pursue quite similar strategies. In the next chapter, these strategies will be discussed and systematically compared in detail.

7.9 CASE 8: AUVA (AUTOCOMPUTER)

AUVA was a privately owned firm, profoundly coloured by family management¹³. It was basically the result of a merger, through a marriage of Chris Yang and Annie Tsao. In 1985, Tsao's family set up AUVA as a production and sales electronic company in motherboards and add-on cards. It merged with Yang-tech in 1988 after Annie Tsao married Chris Yang. Originally among the five founders of Datatech, a rival PC firm, Chris Yang created Yang-tech in 1981 as a sales agency of IC parts and, in 1982, expanded its business to include production and sales of motherboards and add-on cards. Related to these, in 1989, the main board brought in a US computer firm (with 34.7 per cent shareholding) to reinforce its financial structure¹⁴. Motherboards and desktop PC systems, built at its Thailand plant, and notebook PC at its new Chung-li factory, were the mainstay of AUVA's business,

¹³For AUVA's history, I draw on the company's annual reports and my interviews.

¹⁴ According to AUVA's annual report of 1992, this US computer firm is named as "Ming-jen". However, it is nearly impossible for the researcher to trace any information regarding this investment event, because the company was very reluctant to talk about it.

accounting for more than 90 per cent of total turnover. Its subsidiary in Thailand was among the leading computer companies of the country¹⁵ and factored a substantial amount of PC manufacturing equipment.

After the merger in 1988, the company was "very much a Taiwanese family business", with Tsao's parents and sister closely involved. Ambitious and with frugal lifestyles, the Tsao family excluded their operational managers from policy making and financial responsibilities. The president Chris Yang and his wife Annie Tsao, the chairman, were among AUVA's key personnel and jointly with other family members hold nearly 25% of the company's shares. Chris Yang is a graduate of Taiwan Institute of Technology, and Annie Tsao is a graduate of Taipei Institute of Business. Thus both the owner-managers did not have eminent education backgrounds that could associate the company closely with the policy style, business recipe or technology paradigm. However, in the industry, Chris Yang was active in industrial public affairs and was rather "sensitive in mastering every business opportunity"¹⁶. From 1989 to 1992, he acted as the chairman of Taipei Hsien (County) Computer Association, and from 1993, the chairman of China Computer Development Association.

Without a strong engineering professional team, the company developed no more than a quite loose link to the PC technology paradigm. Comparatively, partly through investment links with a US computer firm and partly through sub-contracting connections, AUVA did, however, possess a relatively higher structural link with the paradigm than ASI. Like most of my case firms, as a typical single form of family business, AUVA's considerable connection to the business recipe was mainly dependent upon its long-established business networks in the industry. However, its connection to the policy style was much more complicated. Despite Chris Yang's (the

¹⁵AUVA claimed that its factory in Thailand was the largest, though the exact statistic is not available.

¹⁶Quoted from one of my interviewees.

president) enthusiastic participation in the industry, it was very difficult for AUVA to compete with its domestic rivals such as Acer or Twinhead for access to political resources for reasons of his lack of prominent education background. As we shall see in the next chapter, the desire of the owner-manager to secure the support of the state constantly drove AUVA's choice of strategy and so distracted AUVA's strategic alternatives from the demands of the business recipe and technology paradigm.

Finally, it is worth noting that AUVA only survived for less than a decade. In early March 1994 when my fieldwork was just ended, the company announced liquidation with a debt of more than NT\$600 million¹⁷. Price competition and rapid product change within the PC technology paradigm probably drove out this traditional Chinese family business, which was neither publicly floated on the Exchange nor financially connected to any business group (*Central Daily News (Int'l)*, 3 March 1994: 8).

7.10 CASE 9: ELITEGROUP

With an initial capital of NT\$5 million, Elitegroup was established in 1987, during a peak in the growth of Taiwan's information technology¹⁸. Most of its founders (five out of seven) came from the R&D department of Acer. It began as a mainboard manufacturer and, currently, jointly with its rival FIC, is the world's biggest independent maker of printed circuit boards or motherboards. In 1993, it began overseas production in Mainland China. Some book-sized PCs are assembled on limited OEM orders. Unlike other case PC firms, Elitegroup does not have its own

¹⁷AUVA claimed that its business in Thailand will continue despite the liquidation of its parent company.

¹⁸The profile of Elitegroup is based on my interviews and the company's annual reports.

production line for desktop/notebook PC. Eventually, it set up a subsidiary to integrate forward into PC system manufacturing under the brand name of the company.

Despite its belated entry into the PC industry, discontinuities in supply for chips gave an opportunity for Elitegroup to gain a position. As early as the Autumn of 1989, the company placed largely long-term CPU orders and obtained support from the headquarters of its monopoly supplier - Intel - to become a major account. This decision proved to be "a hen that lays golden eggs". During the unprecedented shortage of CPUs in 1990, the company obtained 386 CPUs at official prices while the grey market price tripled. A medium company like Elitegroup receiving 13,000 CPUs monthly would enjoy an annual advantage of NT\$ 500 million over their competitors (Brown, Sep. 1993).

With access to a stable supply of chips, the company tended to focus on innovative mainboard technologies which rely on bringing advanced CPU into mass production. For example, it was one of the first manufacturers in Taiwan to incorporate VLSI technology and ASICs standards into the design of mainboards. Notably, the company can turn out a prototype motherboard within two or three weeks, about half the time that a US computer firm requires to do the job (Kraar, 8 Aug. 1994: 55). Aiming at keeping up to date with new product information, it operates an R&D centre in America's "Silicon Valley", and set up an E-mail system for the headquarters and the subsidiaries. Partly because of its fame as an innovator, at the end of 1993, the company became the strategic ally of DEC by manufacturing Digital's new Alpha microprocessor on its boards (Clifford, 16 Dec. 1993: 44). Overall, partly through its subcontracting relationships with Intel and other business partners, and partly through its overseas subsidiaries, the company connected itself considerably to the technology paradigm.

The company was managed by a professional young team which had grown together with the company. The main board was made up of these major managers with Thomas Chen as the key man holding shares of about 6 per cent. From its foundation to June 1993, Thomas Chen was the chairman and the principal executive of the company. Like Kent Hsu of Clevo, Thomas Chen is a graduate of Taipei Institute of Technology, implying that the education background of the owner-manager was not positive in associating Elitegroup with the structures of policy style, business recipe and technology paradigm. Its connection to business recipe was largely built through its friendly relationships with Acer.

Since 1993, Dr. Frank Huang (a native), joined Elitegroup as the chairman, after an alliance between the company and a scanner maker, Lee-jek. Dr. Huang was the vice chairman and once the president of Lee-jek, and his educational background included two doctoral degrees: one in Medicine and the other Physics. Also, Dr. Huang is a member of "Seven-Hearts Club", an informal association providing an alternative source of access to the KMT party-state (*Economic Daily Newspaper*, 1 June 1993: 11). Perhaps in order to strengthen its efforts to become a PLC, Elitegroup invited Dr. Huang to chair the board, with his company share holding less than 1 per cent. But with access to more policy style resources, the company is also forced to follow more the policy style rules. Its connection to the policy style in this sense has been substantially increased since 1993. As we shall see in the next chapter, Elitegroup's recent strategy of integration into related PC peripherals (*Central Daily News, (Int'l)*, 2 Dec. 1994: 8) was explained by its increased connection to the policy style.

7.11 THE COMPARISON OF CORPORATE IDENTITIES

The last nine sections introduced the nine PC companies that make up my case studies. Although the companies all operated in the same system of the Taiwanese PC industry, they differed markedly in terms of the social relationships that construct their particular identities in the system. Certainly the relationships between individual firms and social structures - policy style, business recipe and technology paradigm - are too complex to be fully conceived in simple terms. But each relationship as a phenomenon of interest to social scientific research deserves more systematic thinking.

In my theory, firms' links to the three structures constitute their identities, providing them with both access to structural sources of power essential to strategic choice, and certain rules about how to exercise their choices. In general, this consideration raises three concerns. *First*, the more diverse the sources of their power firms have, the wider is their range of choice. *Secondly*, Insofar as firms are socially structured with different degrees of social relationship, their choice of strategy is likely to conform to the social structures on which they depend most. *Thirdly*, insofar as they vary in the strength and intensity of their relationships to the social structures, firms will exercise variant strategic choices in the industry system. Taken together, the three points suggest that *the degree to which firms are capable of exploiting their social relationships is critical to explaining corporate strategic choices and differences*. It is, then, important to compare the extent to which firms demonstrate different degrees of social relationship with the three social structures. These differences were summarised in Table 7.2 (see page 151), introduced in the beginning of this chapter. This table has been discussed through my analysis of each case firm individually, and will be now more systematically compared.

Corporate Identities with regard to Policy Style

In a sense, it is reasonable to argue that most PC firms, while greatly export-oriented, are less likely to recognise the benefits of political advantages than those (e.g. auto and cement firms) which are more geared towards competition in the domestic market. But in order to take advantage of a highly growing stockmarket, firms are likely to go public, hence increasing the degree to which they are shaped by the policy style. Among the nine case studies, Acer, Mitac, FIC and Compal are publicly listed companies. As discussed in Chapter 5, the stockmarket favoured business-group firms and national champions, working against most SMEs. Among the four PLCs, Mitac, FIC and Compal are all related to business conglomerates, while Acer secures the support of political power. Indeed, *Acer's* connection to the policy style was extremely high. In addition to its high links to President Lee Teng-hui and the stockmarket, Acer benefited from a style of public policy which favoured native business elites and industrial leaders. Just as Singh et al (1986: 173) point out, older organisations, like Acer and Mitac, are more likely to be viewed as legitimate in nation states, hence increasing their access to policy style resources. As a PLC, *Mitac's* high connection to the policy style was additionally built on its exclusive Mainlander's ethnicity which still, to some extent, was supportive of political advantages. For example, Mitac's identity as a mainlander firm facilitated its political advantage in the traditionally sensitive area of defence electronics. But in competition with that of Acer and Twinhead, this ethnicity generally limited Mitac's ability to gain a higher degree of political advantage than the former two firms, whose access to the advantage was partly built by the rise of *Taiwanisation* of the KMT party-state. Owned by a set of diversified shareholders including venture capitalists, large banks and a KMT-owned firm, *Twinhead* was more like Acer as a native business star which needed to fulfill a greater degree of conformity to policy style-oriented strategies than the other seven firms.

The other six firms - FIC, ASI, Clevo, Compal, AUVA and Elitegroup - stood considerably apart from the policy style. However, *AUVA* was very aggressive in pursuing its political connections. But this connection was largely confined to the fringe of the policy style which was only supportive of large firms or national champions. Like AUVA whose access to political advantage was considered at a low to medium level, *FIC* and *Compal*, too, did not stand very far from the policy style because of their identities as PLCs. Typical were *ASI*, *Clevo* and *Elitegroup* which all showed a relatively low connection to the policy style. But Elitegroup's connection to the style was reinforced after 1993 when the company invited Dr. Frank Huang, to chair the company in order to fulfill its dream of "going public". To summarise, *Acer's* connection to policy style was considered as extremely high; *Twinhead's* was high; *Mitac's* was medium to high; *FIC*, *Compal* and *AUVA's* were about low to medium; *ASI* and *Clevo's* were low; and *Elitegroup* was low before 1993 and high after 1993.

Corporate Identities with regard to Business Recipe

Turning now to consider their connections to the business recipe, on average, those PC firms growing initially out of the local electronics industry showed a relatively higher connection to the business recipe than their links to policy style. However, in comparison with single-unit family firms, subsidiaries of business groups have the advantage of maintaining effective collaboration to coordinate operational and marketing activities and facilitate technical interchange across group businesses. This ability to use the flexible network of supportive group members was a critical resource in the Taiwanese business recipe. Among the nine firms, Mitac, FIC and Compal are all related to business groups, though they differ in the strength and intensity of their relations. Highest was *FIC*, which was set up as a subsidiary of Formosa, Taiwan's largest manufacturer. As we would expect, the local business recipe served FIC well and helped ensure that its competitive advantage of manufacturing was sustainable. Where FIC possessed the highest access to advantage in the business recipe, another

two subsidiaries of business groups - Mitac and Compal - are considered also to demonstrate a high connection to the recipe. *Mitac* is a subsidiary of "Sun-tung gang" group, one of the successful mainlander conglomerates in Taiwan. *Compal* is a subsidiary of Cal-Comp, one of the longest lived native manufacturers. Both firms' strengths were partly derived from their parent companies' long business traditions which dated back to before the emergence of IT industry. In an environment where personal ties and relations are important, this tradition was a source of social networks providing both firms with learning, adaptability, co-operation and market opportunities.

Another five family firms - *Acer*, *Clevo*, *Twinhead*, *AUVA* and *Elitegroup* - showed a moderate connection to business recipe with their owner-managers considerably depending on local business networks to empower their actions. While its owner's cosmopolitanism mattered a great deal to its strategy, *ASI* was more like an outsider, showing a relative detachment from the Taiwanese business recipe. To summarise, *FIC*'s connection to business recipe was considered as extremely high; *Mitac* and *Compal*'s were high; *Acer*, *Clevo*, *Twinhead*, *AUVA* and *Elitegroup*'s were about medium; and *ASI*'s was low.

Corporate Identities with regard to Technology Paradigm

Finally, I want to discuss firms' connections to the technology paradigm. Because the paradigm of microcomputers is mainly created by US firms and partly around Japanese CPU suppliers, it is reasonable to expect that Taiwanese PC firms would hardly demonstrate high paradigm connection equivalent to those of Acer with the policy style and FIC with the business recipe. None the less, we may argue that *Mitac* had a high connection to PC technology paradigm, which was partly created and transformed by Intel who dominated the world's CPU market. After graduating from the University of California, at Berkeley, Mitac's chairman - Matthew Miao - worked

for a time at the then newly formed Intel. Even today, Miao still holds a good personal relationship with Intel's founder - Andy Grove. *Acer's* long operating history in the industry has also established its medium to high connection to the paradigm. It is considered medium to high because of the company's business links to several US IT firms and the character of its top management. The business links reinforced its connection to the paradigm, but in contrast to Mitac, Acer's top management was a purely native engineering team which put it slightly apart from the US dominated paradigm. Like Acer, *FIC* was considered as showing a medium to high connection to the paradigm. But in contrast to that of Acer, this connection was largely reinforced by the education backgrounds of FIC's owner-managers, which include a PhD of Berkeley, a MBA of Berkeley and a statistics master of Berkeley.

The other four firms - *Clevo*, *Compal*, *Twinhead* and *Elitegroup* - were considered to have only a moderate access to the technology paradigm, as the extent to which they associated themselves with the paradigm seems less than FIC (which was managed by Berkeley's graduates) and Acer (which was linked to considerable investment overseas). Correspondingly, Clevo, Compal and Twinhead were notebook specialists, while Elitegroup was a motherboard specialist. All the four firms had considerable connections to industrial consumers and components suppliers, though the connections were mostly confined to their own particular areas. Comparatively, neither specialising in particular product areas nor committing themselves to particular OEM partners, *ASI* and *AUVA* were on the fringe of the PC technology paradigm. Unlike other entrepreneurs who had a technological background, ASI and AUVA shared a common position as "opportunistic marketers". But lowest would be ASI which was mainly European market-oriented. In comparison with ASI, AUVA was considered to have a low to medium connection to technology paradigm because of its relatively long operating in electronic business. To summarise, *Mitac's* connection to technology paradigm was considered as high; *Acer* and *FIC's* were medium to high;

Clevo, Compal, Twinhead and Elitegroup's were about medium; *AUVA's* was low to medium; and, finally, *ASI's* was low.

I have now finish introducing Table 7.2. Overall, the degree to which firms relate to policy style is clearly greater in Acer, Twinhead and Mitac than in the other five firms. Equally, the greater levels of connections to local market organisations in FIC, Mitac and Compal compared to the other six PC firms should reflect in the greater degree of connection to business recipe in the former firms. Finally, dependence on the technology paradigm is obviously lower in ASI and AUVA than in the other seven firms here.

Again, a glance at Table 7.2 (page 151) will confirm that firms within the same industry system differ from one another. These differences are based on their different links to a plurality of social rules and resources that construct their particular social identities. The identities establish firms' social positions that cause them to make strategic choices differently. To summarise, throughout the thesis, it is my argument that *these identities will serve as an institutional link between structure and agency and that this link connecting macro/meso and micro processes will accord corporate identities with strategic choices*. In the next chapter, the strategic choice of the nine case PC firms will be examined and systematically compared in detail.

7.12 CONCLUSION

In this chapter I introduced my nine case PC firms by establishing the broad similarities and differences of their social identities or positions in relation to the industry system in which the structures of policy style, business recipe and technology paradigm interact. In examining firms' individual identities, I have been drawn into a wider discussion of company histories, their product range, company sites, top-

management traits, key owner-managers and political, business and technological networks. As already discussed in the thesis, firms within the same industry system differ from one another. They are socially constructed with different forms of structural links to their attendant social context. These differences in the nine case study firms' identities are summarised in Table 7.2. According to my theory, it is in the light of these differences that I shall show how firms made their strategic choices differently from one another. This is the task of the next chapter.

CHAPTER 8: STRATEGIC CHOICES

8.1 INTRODUCTION

I began this thesis by contrasting the divergent strategies of two PC companies. This contrast served to introduce the central issue of the thesis: why do firms pursue different strategies? and how are they able to sustain them? As I have argued so far, a firm's uniqueness is an essential aspect of strategic analysis. This uniqueness is a product of the firm's structural relationships. The unique set of relationships gives the firm not only resources empowering its action but also structural links to social rules that govern or constrain its action. Comparatively, the uniqueness constitutes the corporate identities that account for the strategic divergences of the firms. In addition, identities, while providing an institutional link between structure and agency, serve as the driving force for the growth of the firm whose powers of choice derive from the structures of society. These elements make up the main dimensions of my tripartite structural theory of strategy. In this research, I apply this theory empirically to the nine PC firms introduced in the preceding chapter.

In this chapter, I shall both examine how the social identities of the nine case study firms made a difference to their strategic choices and elucidate the social forces behind them. For this account, I shall adopt a thematic approach - around various strategic issues - which will cover the cross-case analysis and results¹. The outcome of this analytical method is a mixture of narrative and themes, of history and theory (cf. Starkey and McKinlay, 1993). I will particularly focus on five major strategic issues: OEM vs. own-brand, purchasing, innovation, internationalisation and diversification. According to Whittington (1993: 79-110), the growth strategies of innovation, internationalisation and diversification have proved useful in illuminating firms' behaviour from a sociological point of view. The other two strategies - OEM vs. own-

¹For different approaches to the composition of multi-case studies, see Yin (1984: 133-5).

brand and purchasing - are generated from the cases themselves. In a similar position, Porter (1990: 680) indicates that one important strategic choice facing Taiwanese firms is whether to pursue a strategy of being an OEM supplier to foreign firms or to seek to create internationally known brand names. In addition, as I have discussed in Chapter 5, the PC technology paradigm is built around the macro rule of open systems which indicates network source, choice of off-the-shelf components and compatibility between products manufactured by different firms. This rule highlights the role of purchasing in illustrating PC firms' behaviour. In relation to the five strategic discriminators, the chapter will finish by examining several key issues on which the nine case firms took very divergent strategies.

8.2 OEM vs. OWN-BRAND

As discussed in Chapter 7, the Taiwanese PC industry has a tendency to specialise in OEM. To a large extent, the OEM business is consistent with the Taiwanese business recipe that promotes volume expansion, cost leadership and contract manufacturing, at the expense of marketing and original design. However, the Taiwanese policy style and the PC technology paradigm are less clear. The KMT state is keen to encourage own-brand strategies to underpin its efforts towards international recognition. The technology paradigm, on the other hand, is ambivalent, offering an established niche to subcontractors at the same time as placing a premium on the ability to market under the company's own name. Thus business recipe, policy style and technology paradigm offer conflicting avenues, between which each Taiwanese player has to choose individually. As this section will show, Taiwanese PC firms tended to resolve the dilemma between OEM and own-brand according to their particular identities in relation to the three structures (see Table 8.1).

Table 8.1 Choice of OEM or Own-brand with respect to corporate identities

	% of own-brand	Policy style	Business recipe	Technology paradigm
Acer	High (50-70)	Extremely high	Medium	Medium-high
Mitac	High (50-60)	Medium-high	High	High
FIC	Low (10)	Low-medium	Extremely high	Medium-high
ASI	Medium-high (30-70)	Low	Low	Low
Clevo	Nil	Low	Medium	Medium
Twinhead	High (50)	high	Medium	Medium
Compal	Nil	Low-medium	High	Medium
AUVA	Medium (30-40)	Low-medium	Medium	Low-medium
Elitegroup	Low (5)	Low (high after 1993)	Medium	Medium

In general, Taiwanese PC firms have tended to pursue more the OEM route. OEM strategies draw on the production-oriented strengths of the Taiwanese PC industry system. *Compal*, for example, is an OEM-based notebook company. Under the OEM arrangement, productivity considerations always have the priority for Compal. Compal's managers identified strongly with this objective: "We are not like Acer which claims itself as the star of the island. We've run our business on an industrial customer-led basis....Profits are the only visible things that we can show to our shareholders." Equally, *Clevo* is much like Compal, being an OEM-based notebook manufacturer which asserts its production orientation: "Since we began, we never thought to promote our brand to be world well-known. It's not our specialisation. It is only in production at this stage that we can compete with other international rivals...OEM is the area where we can successfully make profits." Compal and Clevo have pursued product strategies that are consistent with "OEM culture" in Taiwan's PC industry system. Indeed, this is what we would expect, given the combination of low connections to the policy style and considerable connections to the business recipe.

Another family firm - *FIC* - is OEM-oriented as well. As discussed in the preceding chapter, the company depends on the Formosa group's established capability to underpin its strategy. In Taiwan, Formosa is the biggest manufacturing firm whose reputation certainly plays a key role in the process of creating competitive advantage. Originally founded as a minicomputer agent company, FIC had at least one loyal customer in the Formosa group and a huge potential market through Formosa's relationship with other enterprises, banks, government institutions and so on. While subsequently competing in the international market, FIC has succeeded in building itself a relatively favourable niche by getting access to the resources of the Formosa business group. Accordingly, FIC's efforts concentrate wholly on production efficiency rather than global marketing. The efforts are consistent with its strong connection to the business recipe.

? *Link to 2571*

Elitegroup is also an OEM-oriented firm. As one of the world's major makers of motherboards, the company created a new venture to integrate forwards into PC system manufacturing in order to focus on subcontracting activities. In sum, all these OEM firms have much in common. They are tightly controlled by the owning family (FIC, Compal and Clevo) or business partners (Elitegroup). They are heavily driven by profit considerations. Top managements at these firms are dominated by engineering professionals. In particular, they are considerably independent of the state and tend to depend upon the business recipe to guide their actions.

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However, there are still quite a number of manufacturers starting out as OEM manufacturers and slowly advancing into marketing their own brand products. These firms often have close links with the Taiwanese policy style (see Table 8.1). *Twinhead*, for instance, makes OEM PCs, enough of them to invest in its own brand-name systems which enjoy higher margins. Its vice president Dr. Lee called this the "50-50" strategy, which implies an equal product-mix of OEM and own-brand aiming to support each other. Though highly dominated by engineering professionals, the

company differed from the above firms by substantially developing positions in own-brand market places. Because the company is partly state-owned, it bears the responsibility of creating a global strategy in order to promote the image of Taiwan-made products. Thus, Twinhead's high links to the policy style help explain its strategic choice. ?

AUVA's once own-brand strategy was associated with the background of its decision-makers and, in particular, its structural links with the state. Without an engineering background but active in industrial public affairs, Chris Yang - *AUVA's* president - was keen to reinforce the company's political links to the state while constantly holding its own-brand policy. Its choice of own-brand strategy was thus reinforced by the president's relations with local trading agents and its connection with Taiwanese policy style. ?

The most notable case of own-brand efforts came from *Acer*. Ever since the information industry became feasible, Acer has been the symbol for a Taiwanese export-oriented company which is determined to achieve world-wide sales. It is the first computer company to successfully establish a brand name - Multitech, before switching to Acer in 1988. The changing of the company name represented one of the company's endeavours to pursue a global strategy whereby Acer managed to compensate for the conflict between the language barrier and own-brand behaviour by getting access to the resources of a state-backed national champion: "The major purpose for the change was to come up with a smoother sounding name that can advance our efforts to effective globalisation. Multitech was awkward to pronounce and had caused legal disputes with some other firms of identical name. We spent \$35,000 to come up with the new name and the accompanying logos for our company." The Taiwanese government played a very supportive role in this event (Wang, 1988: 216-25). For a long time, the KMT-controlled mass communication continued to report Multitech's efforts at creating a new name. Almost every person in


Taiwan believed that this company was on the way to becoming Taiwan's first significant multinational company. A few months later, Acer became Taiwan's first publicly floated IT firm.

Among other divergent directions in its strategic development, Acer's product strategy is a new type of Taiwanese penetration of Western markets. The aggressive pursuit of domestic acclaim established a national base for expansion overseas. This internationalisation came out with Stan Shih's ambition so long as the entrepreneurial process was necessary to satisfy external expectation. Armed with patriotic enthusiasm and entrepreneurial inspiration, Acer has been making every endeavour to enhance the global image of its products so that "people won't regard them as something of inferior quality due to the stigma of 'made in Taiwan', but rather as products of internationally recognised stature". For Acer, the whole plan also expressed the luxury of patriotic adhesion to government objectives. In addition, Stan Shih's own commitment to internationalisation was reinforced by the nature and character of being the first publicly listed PC company and being the top employer of the human resource market.² In the case of Acer, access to the policy style resources, such as the stockmarket, the HSIP, social prestige and publicly free advertisement, certainly has proved important in explaining its global strategies.

Mitac represents a more ambivalent case. The company and Acer shared a common position as "industrial leaders and PLCs" whose structural links to the policy style were the great driving force behind their own-brand strategy. In addition, Mitac's long connection with Intel places a premium on its ability to pursue own-brand strategy. On the other hand, Mitac's identity as a subsidiary of the Lien-hua business group propelled its search for OEM business which was more consistent with business

²In a survey of a local magazine, in 1989, university graduates ranked Acer as the most sought-after employer of the society (*Acer's annual company report*, 1990).

recipe. As a result, throughout Mitac's history, it emphasised the balance of OEM and own-brand products.

Finally, in contrast to the motivation of Twinhead, Acer and Mitac, *ASI's* product direction of own-brand concentration was to be highly reinforced by the centralisation of ownership structure and, in particular, the background of the owner as a relative outsider to the Taiwanese business recipe. From the early 1980s when one of *ASI's* major clients in New Zealand announced liquidation because of its violation of IBM's I.P.R., Paul Liu had decided not to explore other markets abroad without using the "ASI" brand. By its divergence in the industry, *ASI's* idiosyncrasy of marketing orientation in pursuit of the European market owed much to the professional expertise of Paul Liu with his language education background and his experiences as travelling and trading agents. The considerable distance between *ASI* from both the business recipe and the technology paradigm reflected the unwillingness of the owner to focus on an OEM business mostly related to the U.S. market. However, its choice of own-brand strategy was not because of its connection to the state's search for international respectability. In fact, this connection was quite low. It was the owner's personality, professional association with the European market, and particularly the company's great distance from the business recipe that made a difference to its choice. 

To conclude, social relations with the policy style clearly contribute to the firms' tendency towards own-brand strategy while *ASI's* exception was based on its owner's cosmopolitanism and relative detachment from the Taiwanese business recipe.

8.3 PURCHASING BEHAVIOUR

Purchasing behaviour offers an important choice for Taiwanese PC firms. Although the industry currently produces 60 per cent (by value) of a computer system

independently, the 40 per cent of imported items tend to include some of the most important parts, especially LCDs, HDDs and CPUs. CPUs, for example, mostly depend on the supply of Intel. More recently, AMD, Cyrix, Motorola and IBM started to supply CPUs, but they are largely confined to making replicas of Intel's microprocessors (Ristelhueber, 1993: 58-67). In general, the PC technology paradigm encourages firms to build close relationships with Intel which still dominates the CPU market. The Taiwanese policy style supports firms' long-term commitments to international partners. However, the Taiwanese business recipe provides rules that indicate a more opportunistic relationship and short-term commitments between specific business partners. In other words, the recipe is only supportive of using multiple suppliers. Tensions between policy style, business recipe and technology paradigm thus produce a dilemma from firms in purchasing strategy - a dilemma between diversification of CPU sources and supplier loyalty (cf. Brown, Sep. 1991: 77-8). As this section will show, Taiwanese PC firms made their choice in good part according to their particular identities related to the three structures (see Table 8.2).

Table 8.2 Choice of purchasing: diversification of sources vs. supplier loyalty

	Purchasing	Policy style	Business recipe	Technology paradigm
Acer	Loyalty	Extremely high	Medium	Medium-high
Mitac	Loyalty	Medium-high	High	High
FIC	Mix	Low-medium	Extremely high	Medium-high
ASI	Diversification	Low	Low	Low
Clevo	Diversification	Low	Medium	Medium
Twinhead	Diversification	high	Medium	Medium
Compal	Diversification	Low-medium	High	Medium
AUVA	Diversification	Low-medium	Medium	Low-medium
Elitegroup	Contracting	Low (high after 1993)	Medium	Medium

To resolve the systemic tensions, typical strategies such as those of *ASI*, *Clevo*, *Twinhead*, *Compal* and *AUVA* tended to diversify their CPU sources. They asserted their emphasis on the cost side. As one manager at AUVA contended "why diversify? It is very simple. As we all know, don't put all one's eggs in one basket...Cost is very important. But we would continue to do business with Intel." Largely lacking ready access to Intel and relatively independent of the state, these five firms conformed to the business recipe and adopted the choice of diversification of CPU sources. On the other hand, why did the other four firms differ? Did the environment tolerate their deviancy from the business recipe?

Acer and *Mitac* had special relationships with Intel, both having subsidiaries acting as Intel distributors. The high level of their connections to Intel, along with their high links to the state, had led both firms to conform to the technology paradigm rule of "supplier loyalty". Split from Acer and still run by Acer's former managers, *Elitegroup*, too, depended upon long-term contracts with Intel. The contracts were largely reinforced by Elitegroup's connection with Acer. However, FIC's choice of purchasing was more complicated.

To *FIC*, the strategy of how to resolve the purchasing tension came from searching for balance between policy style, business recipe and technology paradigm. When the researcher interviewed a middle manager about this issue, she refused to answer. In a later interview with one director for the PC business, he explained that, "of course, cost consideration is important. That is why we have business with AMD or even other CPU suppliers. But we don't say it. We are a very big company....We have to keep face for Intel." As discussed in the preceding chapter, the degree of dependence upon the business recipe was clearly greater in FIC than in the other eight firms. While conflicting with the technology paradigm (note that FIC was managed by three Berkeley graduates and so showed a relatively high connection to the paradigm),

this strong dependence in turn limited the willingness of the owner to conform to diversified purchasing. In addition, as a PLC with its stock price persistently higher than Acer and Mitac, FIC also had a tendency to conform to the policy style. FIC, Intel's fifth-biggest customer buying about US\$500 million in Intel products in 1992 (Clifford, 16 Dec. 93: 45), thus provides an extra angle on purchasing strategy. As well as playing by the business recipe rule to diversify its CPU sources, FIC also showed obeisance to the policy style and the technology paradigm in keeping silent about its choice.

8.4 INNOVATION

Managing innovation is an important feature of the PC technology paradigm. This feature is built around the rules of open systems and rapid product change that encourage firms to pursue R&D alliances and I.P.R. (Intellectual Property Right) protection. The Taiwanese policy style, too, promotes technology venture, inter-firm cooperation and licensing practices. However, the Taiwanese business recipe discourages inter-firm cooperation and has a tendency towards counterfeiting and illegal activity. Thus, technology paradigm, policy style and business recipe provide two strategic dilemmas that Taiwanese PC firms faced. One is whether to take part in inter-firm cooperation or not, the other is whether to conform to the rule of respect for I.P.R. or not. As this section will show, Taiwanese PC firms tended to resolve the dilemmas according to their social identities related to the three structures.

not
CPB?

8.4.1 Choice of Inter-Firm R&D Cooperation

As discussed in Chapter 5, one important rule of the PC technology paradigm is strategic alliance or inter-firm cooperation. This cooperation can afford a firm access to new technologies or new markets, economies of scale in joint research and sharing

of risk. The Taiwanese state also promotes industrial cooperation, and, on many occasions, sets up strategic consortia with local companies. In the case of PCs, the cooperation between the state and local firms includes the projects of PC/XT, PC/AT, 386/AT, 486/AT and the recent notebook development consortium which is also the biggest one. In order to provide a comparative basis, I shall take the example of the notebook development consortium which was organised in 1990. At that time, all my case firms had come into existence.

Table 8.3 Choice of notebook strategic consortium

	Alliance	Policy style	Business recipe	Technology paradigm
Acer	Yes	Extremely high	Medium	Medium-high
Mitac	Yes	Medium-high	High	High
FIC	No	Low-medium	Extremely high	Medium-high
ASI	No	Low	Low	Low
Clevo	No	Low	Medium	Medium
Twinhead	No	high	Medium	Medium
Compal	No	Low-medium	High	Medium
AUVA	No	Low-medium	Medium	Low-medium
Elitegroup	No	Low (high after 1993)	Medium	Medium

As Table 8.3 shows, only *Acer* and *Mitac* joined the consortium. Both firms were very much related to the policy style. As one manager of Acer indicated: "If we don't join, who will?..Actually, most of these firms (who joined the consortium) are very small..Big firms like FIC, Compal and Twinhead don't join. But we are the industry leader. We have to give a lead." One industrial observer further indicated: "Acer has to join, because Stan Shih is the previous chairman of Taipei Computer Association (TCA). Mitac also has to join this consortium...(because) C.S. Ho (then

Mitac's president) is the incumbent chairman of TCA...". Overall, the relatively high connection with the policy style drove Acer and Mitac to join the notebook development consortium. However, tensions between policy style and business recipe put a strain on both firms' commitment to the consortium. Both were believed to carry on their own notebook R&D projects, even though these projects overlapped with the industrial consortium one.

However, high connection to the policy style did not drive *Twinhead* to join the consortium. Twinhead's choice was facilitated by its strong R&D team led by its then president - Charles Chen. In the industry, Charles Chen is well-known as having the highest ranking in the university entrance of his time. Therefore, this R&D team reinforced Twinhead's connection to the business recipe that discourages strategic alliance. As one manager of Twinhead identified with its choice: "In the industry we are the best. To join the consortium did not help us. In contrast, it just led to sharing our technology with our rivals." The relatively high connection to the business recipe, too, also encouraged *Clevo* and *Compal* to commit resources on their own notebook R&D project. *FIC*'s great dependence on business recipe also discouraged its search for strategic alliance.

The mutual reinforcement between low policy style orientation and medium business recipe orientation also pulled *Elitegroup* out of the consortium. *ASI* did not join the consortium, because of its relative distance from the policy style and technology paradigm. However, *AUVA* was an exception. As I have described, *AUVA*'s owner cum president - Chris Yang - was very active in industrial public affairs. In 1990 when CCL and TEAMA organised this consortium, Chris Yang acted as the chairman of Taipei Hsien (county) Computer Association. Both the association and TEAMA "did not like each other" and this certainly constrained the willingness of the owner-manager to join the consortium. Eventually, *AUVA* began its notebook production with access to two former employees from an OEM notebook firm which

was split from Compal. Accordingly, AUVA's choice not to join the consortium was facilitated by its connection to the Taiwanese business recipe which promotes the rule of opportunistic external acquisition of expertise.

8.4.2 I.P.R. Protection: the Free Rider or Leader

Table 8.4 Firms' tendency towards I.P.R. violations

	I.P.R.	Policy style	Business recipe	Technology paradigm
Acer	Earlier: more or less Recently: no (claiming I.P.R. advantage)	Extremely high	Medium	Medium-high
Mitac	Negative	Medium-high	High	High
FIC	Negative	Low-medium	Extremely high	Medium-high
ASI	More or less	Low	Low	Low
Clevo	More or less	Low	Medium	Medium
Twinhead	More or less	high	Medium	Medium
Compal	More or less	Low-medium	High	Medium
AUVA	More or less	Low-medium	Medium	Low-medium
Elitegroup	Missing	Low (high after 1993)	Medium	Medium

Within the industry system, most Taiwanese PC firms pursued a free-rider strategy consistent with the business recipe. In so doing, they used the technique of reverse engineering to advance their products. However, reverse engineering is hardly a cheap way to acquire expensive know-how. The PC technology paradigm discourages firms' choice of counterfeiting or free-riding as reverse engineering inevitably violates intellectual property rights (IPR). The state's emphasis upon international relations also negated this kind of R&D strategy. Since Taiwan has been

willing to show more responsibility to the global economy in an effort to join the U.N., the state has created many pressures on firms' counterfeiting and other illegal practices, typical of the business recipe³.

Just as Table 8.4 shows, most of my case firms, such as Acer, ASI, Clevo, Twinhead, Compal and AUVA had had experiences of being charged with I.P.R. violations. Only Mitac, FIC and Elitegroup were free from I.P.R. accusation. The owners of both *Mitac* and *FIC* were educated in the U.S. and this education background provided a sharp contrast to the industry which was dominated by the native university graduates. The relatively high connection to technology paradigm thus has driven Mitac and FIC to conform to the avenue of the technology paradigm, at the expense of their links to business recipe.

Elitegroup was an exception. There are two reasons for this exception. First, there were significant profits in their early years that led them carefully to protect their position in the industry. Secondly, Elitegroup was the world's leading motherboard firm whose connection to Intel drove the company into the search for motherboard market leadership through what it calls "wave and tank tactics". As a senior manager of Elitegroup explained: "Since the investment in motherboards is not huge - say - about NT\$1 million, therefore we let the R&D people do whatever they want to do....maybe the products are numerous...but let only one succeed and that will be enough....Continuing to develop new products is a weapon for marketing people, like tanks to move forward...Tank strategies are to combine R&D and marketing people to conquer the market....Afterwards we'll see what happens and decide what to invent

³After the breakdown of trade talks between US and Taiwan in early March 1993, principally over increased protection for I.P.R., Taiwan was told to pass legislation acceptable to the US under the threat of the possibility of 100% tariffs on electronic exports under retaliatory measures permitted by the US Omnibus Trade Act of 1988. It is generally believed that Taiwan, which is vulnerable because of its diplomatic isolation and its pending application to join the GATT, is being made into an example for Washington's world-wide war against I.P.R. theft (Baum, 8 April 1993).

next." Therefore, Elitegroup did not pursue a free-rider strategy. Instead, they "throw spaghetti at the wall and see what sticks" (Peters, 1994: 18). The innovation strategy for Elitegroup is therefore a combination of the evolutionary process of market selection and self-reinforcing sets of organisational resources.

Finally, I want to focus on the implication of *Acer's* case which is still more interesting. In Acer's earlier history, the company more or less committed itself to some counterfeiting activity. For example, Apple brought the company to court when it marketed its Apple-compatibles in the US during 1983 and into 1984. But the judge found no infringement of copyright. Gradually, the innovation strategy at Acer has changed from the free-rider to leading or fast following directions. This change of strategy is less about satisfying market exchange partners than securing a dominant position as industrial leader. In more detail, this strategic change, while approved by the technology paradigm, may be more consistent with Acer's identity as national champion, but tensions between the structures brought pressures on Acer's action.

Between 1987 and 1989, for example, the pursuit of a leading innovation strategy led Acer to face problems in committing far too many resources to the micro-channel architecture of technological advancement. As Stan Shih put it:

"When IBM introduced the PS/2, everyone wondered if he should follow. At that time, Acer had the resources so it decided to commit - it couldn't afford to miss the opportunity. But because IBM feared the clone market, MCA was only semi-open, not really open. IBM's strategy was to protect its corporate accounts. However, the PC became popular because it was based on an open standard. With MCA, there weren't the clones to make it popular and we had to switch back to AT and EISA. For Acer, it is not in a position to introduce a standard. You need size or a niche to do that...(in 1989) Acer almost committed (itself) to SPARC but it learned from its mistake with Micro-channel. However, if [MCA] happened again, I might make the same decision to invest if I had the resources. If you just wait and see, you may end up losing out in the end".⁴

⁴Interview with Stan Shih (*Electronic Business*, May 1991: 44).

In general, while against the business recipe, innovation strategy at Acer is governed by fast-follow motives attempting to secure the inherent advantage of emergent PC knowledge as soon as possible. However, the relative distance from the technology paradigm restricted Acer's ability to achieve this advantage. Moreover, while the intersections of policy style and business recipe have a tendency to deny monopolistic advantages, technical superiority may not actually help improve Acer's competitive position. For example, despite its relatively high connection to the policy style, we see how difficult structural change in enabling patent protection can be in practice (see "Acer's dilemma in sustaining I.P.R."). Accordingly, Acer's high structural links to the policy style may provide the company with vital social resources important to its own-brand strategy, and yet the links, while providing structural sources of power for innovation, were denied by the business recipe which still connected Acer in a considerable sense and so constrain its action. In short, Acer's unique identity as a national champion drove its search for I.P.R. strategy, but the recipe did not support this deviancy and its relative detachment from the technology paradigm denied it any substantial first-mover advantage.

ACER'S DILEMMA IN SUSTAINING I.P.R.

Tired of playing the I.P.R. defendant to industry dominators, Acer went on the attack and became the plaintiff in a case regarding its "chipUp" technology. Announced in 1991 and granted a patent by Taiwan National Bureau of Standards in January 1992, the technology basically provides an upgrade path for PCs by simply changing the CPU. Acer claims ChipUp is the most convenient and economical way to upgrade a PC, since it eliminates the need to replace the machine itself or even the motherboard. And since many PCs are shipped from Taiwan without CPUs (easily inserted at the destination market), ChipUp technology enables Acer warehouses to reduce inventory while increasing flexibility. Starting in December 1992, the company sent certified letters to dozens of manufacturers, including many of Taiwan's top 30 computer marketers, warning them to stop production of upgradeable motherboards or pay a royalty on every unit shipped.

The move infuriated the heads of many of the companies involved, who then formed an unspoken "anti-Acer alliance" and launched a noisy debate in the local media. They scoffed at the US\$1 million dollar "prior use fee" (which was later changed to US\$38,000) and the royalty structure proposed by Acer. They argued that CPU upgradability is a feature provided by Intel and other CPU manufacturers and is not a unique technology invented by Acer, regardless of whether or not Acer held the patent rights in Taiwan. After mediation by several government institutes and a two month "cooling off" period, Acer proposed lower royalty fees as a compromise to its local competitors, until Acer could attain the ChipUp patent rights in a third country, presumably the United States. In a result, none of the accused stepped forward to pay and the case appeared headed to court.

After the realisation that IT firms all over Taiwan were turning against the Acer group in disgust, Stan Shih made the decision to drop the royalty demands until US patent rights are secured. Local pundits saw this as a last ditch effort to "save face" in an embarrassing public relations flop that had little chance of succeeding in the first place. Industry experts generally dismiss Acer's chances of gaining the ChipUp patent rights in the US.

Source: Tuck (May 1993) (Partly quoted)

8.5 INTERNATIONALISATION

In past years, the interactions of business recipe and policy style created an environment which offered Taiwanese PC firms cheap labour and land to gain a cost advantage over international competition. Recently, the environment has changed. Large-scale currency appreciation, rising wages and land prices have decreased this advantage. In order to remain cost-competitive, Taiwanese PC firms can choose to import foreign labour or move abroad where less-expensive labour is still available. However, the Taiwanese policy style discourages the importation of foreign workers, with only a limited quota per year allowed. The style also discourages firms from investing in mainland China for obvious reasons. However, investment in China is encouraged by the Taiwanese business recipe, which has traditionally put forward cheap labour as part of a cost strategy. This cost strategy is additionally consistent with the technology paradigm rule of cheap production.

On the other hand, the paradigm indicates the rule of flexibility and entrepreneurship that encourages big international firms (such as Acer and Mitac) to form SBUs in order to respond quickly and to exploit local market opportunities. In turn, the recipe discourages commitment to particular markets and partners, but the policy style supports firms' searches for internationalisation.

Accordingly, tensions between policy style, business recipe and technology paradigm provide conflicting routes for firms' choice of internationalization. As this section will show, my case firms made their choice according to their individual identities related to the three structures.

8.5.1 Choice of Importing Foreign Labour

Table 8.5 Choice of importing foreign labour

	Importing choice	Policy style	Business recipe	Technology paradigm
Acer	No	Extremely high	Medium	Medium-high
Mitac	No	Medium-high	High	High
FIC	Yes	Low-medium	Extremely high	Medium-high
ASI	No	Low	Low	Low
Clevo	No	Low	Medium	Medium
Twinhead	No	high	Medium	Medium
Compal	Yes	Low-medium	High	Medium
AUVA	No	Low-medium	Medium	Low-medium
Elitegroup	No	Low (high after 1993)	Medium	Medium

In order to decrease labour costs, Taiwanese PC firms can import foreign workers. Among my case firms, however, only *FIC* and *Compal* chose to import foreign labour (see Table 8.5). Both firms are subsidiaries of business groups which have long operated in Taiwan's environment and are greatly business recipe-oriented. This recipe orientation, together with the relative distance from the policy style, drove both of the firms' search for importing foreign workers. However, with regard to being recipe-driven, *Mitac* is an exception. Though closely related to business groups, Mitac was reluctant to import foreign workers. Not only did Mitac's relatively high connection to the policy style constrain its freedom to import foreign labour, but tensions between ethnic identities made a difference too. Unlike Formosa and Cal-Comp - the parent companies of FIC and Compal (respectively), Mitac's parent company - Lien-hua business group - was controlled by a mainlander entrepreneur who preferred to isolate its economic activities from other foreign ethnic groupings. This was because foreign workers might "raise the sensitivity of ethnic conflicts". Thus,

Mitac's strong links to the recipe did not drive the company into the search for importation of foreign labour. However, as in FIC and Compal's cases, the relatively high connection to the business recipe gave their choice a sense of direction. Similarly, the other five firms did not respond to this direction because of their relatively low connection to the business recipe. In addition, as in *Acer's* case, its high connection to the policy style further constrained any tendency towards following the business recipe in this particular aspect.

8.5.2 Choice of Investment in South-eastern Countries and China

Table 8.6 Choice of investment in south-eastern countries and China

	Choice	Policy style	Business recipe	Technology paradigm
Acer	Malaysia	Extremely high	Medium	Medium-high
Mitac	China (1993)	Medium-high	High	High
FIC	China (1991)	Low-medium	Extremely high	Medium-high
ASI	China (1993)	Low	Low	Low
Clevo	Malaysia	Low	Medium	Medium
Twinhead	No	high	Medium	Medium
Compal	Thailand	Low-medium	High	Medium
AUVA	Thailand	Low-medium	Medium	Low-medium
Elitegroup	China (1993)	Low (high after 1993)	Medium	Medium

Rather than importing foreign workers, most PC firms turned their attention to the neighbouring Pacific Rim countries where less-expensive labour and land are still available⁵. Acer began overseas monitor and keyboard production in Malaysia and was later followed by Clevo's keyboards; Compal's monitors and AUVA's motherboards

⁵ An added bonus for manufacturers who ship directly from Southeast Asia is that the products are often available with GSP (Generalised System of Preference) Form A, which means that they are exempt from import duties ranging from 3.9% in the U.S., 3.9 in Canada, 4.9% in the EC, and 8.9% in Eastern Europe. This is very significant if the product value is high.

and desktops in Thailand; and more recently, FIC, ASI and Elitegroup's motherboards and Mitac's monitors in China⁶. However, rather than going abroad to set up a new factory, Twinhead is simply managing its manufacturing operations at home (see Table 8.6). So why did *Twinhead* diverge from the other eight case PC firms?

As discussed in Chapter 5, the recipe rule of strong family control has led to a company which does not usually function in hierarchies and has a tendency to pursue an opportunistic market strategy. Consequently, the diversified capital structure of Twinhead conflicted with this recipe rule and this conflict constrained action that would conform to the business recipe search for overseas' cheap natural resources. On the other hand, the considerable connection with the business recipe drove another two notebook firms - *Clevo* and *Compal* to invest in Malaysia and Thailand (respectively).

For the firms searching for cheap labour, China should be the best choice, consistent with both the business recipe and the technology paradigm⁷. However, this choice was not approved by the state until 1993. For example, the mutual reinforcement between state and business relations drove *AUVA* to invest in Thailand, instead of investing in China. However, the relative distance from the policy style and the strong connection to the business recipe explain FIC's first move in China in 1991. However, as a PLC, *FIC* denied that it had any facilities, or even plans for starting manufacturing in China. But the later evidence showed that it was organising a manufacturing programme in China regardless of government regulation⁸. In general, while heavily business-recipe-driven, FIC was very likely to invest in China where its parent company - Formosa - was planning the world's largest petrol-chemical plant in Fu-jian, China. However, its connection to the policy style more or less constrained its

⁶For a general discussion on the PC production shift from Taiwan, see Uimonen (May 1993).

⁷For example, the current largest PC firm - Compaq - operates three factories in the world; One in the US, one in Scotland, and the other in Guangdong, China.

⁸Interviewed with academics. This information was also confirmed by China's governmental officers (*Central Daily News (Int'l)*, 18 Dec. 1994: 8).

investment. Eventually, facing the tensions between policy style and business recipe, FIC did go to China but denied that it had done so. This behaviour, in a sense, is just like its policy on CPU diversification.

Instead of "going first", *Acer* and *Mitac*, while much more related to the policy style than FIC, were only planning their investment in China in 1991. But Mitac went to China in 1993 when the state had just lifted its ban on investment in China. The strong connection to the policy style certainly put a constraint on Acer's tendency towards investment in China. In turn, the relatively high connection to the business recipe, together with Mitac's identity as a mainlander business, drove the firm quickly to enter the China market. The relative distance from the policy style also facilitated *AST's* investment in China in 1993 when the firm had started its motherboard manufacturing. Like FIC and ASI - as motherboard firms which were more likely to face more pressures from the cost side - *Elitegroup* also embarked upon a recent investment programme in China though it was described as "rather late to enter into China" As one manager of Elitegroup indicated: "You see, FIC had been in China for two years..ASI had been there for one year,..Our movement to China is a little bit too late..But we still have to go."

A number of reasons contribute to explaining Elitegroup's belated access to China's cheap resources. Firstly, there was the personal enthusiasm of Elitegroup leaders, who were willing to upgrade their own local industries. Elitegroup started their business with modern manufacturing equipment which thereby constrained their investment in China. Secondly, there were the significant profits in their early years that led them to neglect other considerations in order to achieve cost advantage. Finally, and most importantly, the desire to obey floatation regulations was deeply grounded in the strategic investment decisions of the company, which had long dreamt of "going public". In order to become a PLC, the company invited Dr. Frank Huang, who had good relationships with the KMT state, to chair the company. As a result, the

intention to develop strong connection to the state constrained Elitegroup's choice of China investment.

8.5.3 Production Activities in Europe and the US

Table 8.7 Production activities in Europe and the US

	Choice	Policy style	Business recipe	Technology paradigm
Acer	Holland, US	Extremely high	Medium	Medium-high
Mitac	UK, US	Medium-high	High	High
FIC	No	Low-medium	Extremely high	Medium-high
ASI	No	Low	Low	Low
Clevo	No	Low	Medium	Medium
Twinhead	No	high	Medium	Medium
Compal	No	Low-medium	High	Medium
AUVA	No	Low-medium	Medium	Low-medium
Elitegroup	No	Low (high after 1993)	Medium	Medium

In addition to policy style and business recipe account on firms' international conduct in China and Pacific Rim countries, the restructuring of the PC technology paradigm has increasingly defined the value of internationalisation. *Acer* and *Mitac*, with their strong connection to the technology paradigm, are particularly influenced by the paradigm which indicates the rule of flexibility and entrepreneurism to run international business (see Table 8.7). In more detail, the rapid decrease in the price of components and radical technical innovation have driven Acer and Mitac to take advantage by bringing their final assembly closer to the market. Both had manufacturing activities in Europe and the U.S. and they depended upon the technology paradigm to drive their international operation. The other considerably paradigm-connected firm FIC, in turn, did not operate production activities in Europe and the US for reasons of its extremely high connection to the recipe that constrained

its search for internationalisation. In particular, a glance at Table 8.5 will confirm that the rationale of internationalisation for both Acer and Mitac is partly associated with the English language⁹. As we would expect, in terms of investing in Europe, Taiwanese firms prefer to invest in the UK or Holland where English is much more popular than in the rest of European countries.

In 1990 when the company dipped into the first losses of its history, Acer decided to break down its large organisations into more fleet-footed, "market responsive business units". As Stan Shih explained: "the strategy is that, while restructuring may hurt in the short-term, the smaller companies will be better prepared to seize opportunities quickly". In addition, the company had recently expanded its assembly operations in Holland, and had made Eindhoven the base for its European operation.

Mitac, with about 40 per cent of its sales in Europe, had lately started the company's new European plant in Telford, England¹⁰. The former president of Mitac - C.S. Ho - indicated the "Modulised Manufacturing System" overseas had its advantages of "decreasing the risks of cost variations,...enjoying low importing tariffs, and...increasing shipping efficiency" (*Economic Daily Newspaper*, 28 Jan. 1994: 12).

In a sense, both corporations had fragmented into numerous independent companies that addressed specific markets. And both firms were moving manufacturing out of Taiwan and closer to particular geographic regions in order to increase local market penetration. While Mitac planned a headquarters in each regional

⁹On this point, see page 86.

¹⁰The European Community's "local content" regulations certainly give incentives to local assembly. Import duties differ vastly for imports of components that are locally assembled compared to importing a complete system. Import tariffs for a motherboard are significantly lower if they come without the CPU, which is easily bought and attached locally anyway. This is the main reason behind the myriad of European firms who nowadays assemble their own system, and have thereby basically shut out the smaller Taiwanese PC firms, although Taiwan remains the main supplier of motherboards and add-on cards for these companies as well.

market, Acer licensed assembly operations from South America to Europe, Africa and Australia, with the eventual goal of recruiting third-party investment to localise ownership. Both strategies reduced delivery time from months to days. One manager at Acer asserted, "..Our policy is to 'localise' these overseas operations by finding native people in the host countries to head operations." In the international operation where the prevailing local contexts are unaccustomed to companies, the matching of strategy and structure in exploiting the technology opportunities of their locales is more obviously understood. The vice president for international manufacturing of Mitac identified further with this technological distinction: "..(for example), Hard disk drives prices drop every three months, CPUs the same..If Mitac can build a machine out of the latest-priced components, it sells at an advantage; if it's stuck with that machine past the next price drop, it's cooked". Overall, then, while conforming to the rule of flexibility and entrepreneurship, Acer and Mitac's organisational restructurings were the socialised outcomes of the PC technology paradigm, though this rule partly conflicted with the Taiwanese business recipe.

To conclude, Acer and Mitac's choice of internationalisation was technology paradigm-driven and this choice was consistent with the policy style search for international recognition. In other words, their relatively strong relations to the technology paradigm and policy style steered their activities while overriding the importance of business recipe. Indeed, a strategy of immediate market sensitivity requires mastering a flexible organisation structure to enable a quick shift from one technology to another in order to follow in the direction of "multitech innovations" (Dror, 1993). An international business that focuses on technology management thus has to be diversified down to a local division or lower. It may be less efficient for routine operations, but it will be more effective in exploiting global resources of technology paradigm and thereby tuned to the competitive advantage of the company.

8.6 DIVERSIFICATION, INTEGRATION AND ACQUISITION

Table 8.8 Choice of diversification

	Choice	Policy style	Business recipe	Technology paradigm
Acer	Integration	Extremely high	Medium	Medium-high
Mitac	Integration	Medium-high	High	High
FIC	Integration	Low-medium	Extremely high	Medium-high
ASI	Merge	Low	Low	Low
Clevo	Focus	Low	Medium	Medium
Twinhead	Focus	High	Medium	Medium
Compal	Focus	Low-medium	High	Medium
AUVA	Opportunistic diversification	Low-medium	Medium	Low-medium
Elitegroup	Focus & Integration into peripherals	Low (high after 1993)	Medium	Medium

In the system of the Taiwanese PC industry, choice of diversification offers a sharp conflict between business recipe, technology paradigm and policy style. The Taiwanese business recipe encourages opportunistic unrelated diversification and discourages vertical integration and acquisitive growth strategies. However, the PC technology paradigm indicates the rule of continual growth which, in turn, promotes broadening, deepening and upgrading product range around the core technology. The Taiwanese policy style is a little ambivalent. The state offers tax incentives to favour new firms, on the one hand, and increasingly promotes the development of native conglomerates as the means of both justifying the Taiwanese controlled regime and pursuing international respectability, on the other. Thus, diversification strategy exposes systemic conflicts between the three social structures. As this section will show, the nine case firms tend again to resolve the conflicts according to their social identities related to the three structures (see Table 8.8).

In a casual conversation with Dr. Frank Huang¹¹, Elitegroup's new chairman, I asked him how PC firms can survive in today's environment. He stated: "There are only two strategies - focus or integration. For example Clevo, Twinhead and Compal focus on notebook segments. They can survive in their own niches...The big three - Acer, Mitac and FIC - can continue their activities, of course." But how about middle firms like ASI and AUVA? "They have to really think about that....ASI just merged with CAF - (a subsidiary of Yung-fen-yu business group)...It will find its own way...In order to compete in today's environment, AUVA has to seek the support of conglomerates or it will be in danger." Two and a half months after the interview, AUVA announced liquidation. A few months after this liquidation, ASI integrated into notebook PC manufacturing.

The comparison of ASI and AUVA is interesting. Before 1993, *ASI* was much more like an outsider in PC industry which is dominated by engineering professionals. The relative detachment from the policy style, business recipe and technology paradigm constrained the firm's tendency towards integration or product innovation. However, starting in 1990, the company's identity began to change. The company diversified into motherboard production after the arrival of president Jack Huang, the former vice president of Elitegroup. In 1993, ASI sought to merge with CAF to create a much larger firm in competition with the future advantages of mass volume and of the cluster effects of technology paradigm rules. ASI's merging with CAF has brought a change to its prior identity, substituting an outsider with relatively high connections to the business recipe and technology paradigm. This merger may endanger the founder's control, but at least it contributes to ASI's survival for reasons of its increased access to structural sources of power.

¹¹This conversation was taken place at the TCA on 21 January 1994. At that time, Dr. Huang was invited by the TCA to address a speech.

Before ASI's merging with CAF, AUVA was somewhat similar to ASI. Both companies lacked conglomerate financial support and a significant professional background. But comparatively, AUVA was more likely to diversify into unrelated or related markets than ASI because the former had a relatively high connection to business recipe and technology paradigm. The conflict between business recipe and technology paradigm, however, has brought pressures to AUVA, partly resulting in AUVA's collapse.

In 1993, despite severe shedding of the Taoyuan site, and even slashing margins in its traditional business, AUVA's leaders were driving their company into a major investment in the workstation systems and notebook range. Technology paradigm-driven, this investment was greatly reinforced by its external shareholder - a US computer firm which invested in AUVA in 1989. As a singular kind of family business, AUVA also invested heavily in the property market, conforming to the recipe rule of opportunistic diversification. However, this action certainly formed a constraining influence over its debt operation from financial institutions. Eventually, the owners of AUVA "destroyed the company with its diversified investment in the volatile property market" (*Central Daily News (Int'l)*, 3 March 1994: 8).

In contrast to AUVA pursuing opportunistic diversification, Twinhead, Clevo and Compal pursued a focus strategy building around the core of notebook technology. This strategy was consistent with a technology paradigm which promotes either a focus or integration strategy. *Twinhead*, for example, is a notebook specialising firm. Its high connection to the policy style constrained its tendency towards opportunistic diversification which is business recipe-driven. However, Twinhead is not a PLC. In turn, its well-known R&D team provided the company with a moderate connection to technology paradigm. As a result, the mutual reinforcement between state and technology relations contributed to its focus strategy. In addition,

these relations, together with its newly established R&D centre in the US, enabled Twinhead to enter the workstation systems market.

Just as happened with Twinhead, the connection with the technology paradigm also partly contributed to *Clevo's* focus strategy. The company originally specialised in keyboards. It expanded into manufacturing notebook PCs with its R&D executive and technical team mainly coming from Acer. Though concentrating on notebook areas, Clevo still pursued some sort of diversification. This diversification was reinforced by its relatively high dependence on business recipe and technology paradigm. Largely lacking access to the policy style, Clevo did not pursue integration or an acquisition growth strategy. Originating from brick manufacturing, the company invested mainly in the areas of PC peripherals, such as keyboard, monitor, case and power supply. All these products did not need heavy investments. In addition, as a TIT graduate, Kent Hsu has developed a close relationship with the operation of Taiwan's grey electronic market which provides a source of technological diffusion and supplier networks.

Like Clevo, as an OEM notebook firm, *Compal* also pursued a focus strategy. However, its relatively high connection to the business recipe did not contribute to its opportunistic diversification behaviour. The diversification was pursued by its parent company - Cal-Comp which, for example, set up Compal better to exploit the scope economies of physical assets in related electronic manufacturing areas. In addition, Cal-Comp's investment in PC areas was reinforced by the group's long-term relationships with Japanese suppliers who dominated the world's LCD market. In an environment where rapid product change is a rule, mutual obligations between suppliers and customers may turn out to be an advantage. To take an example, in October 1990, shortly after Compaq shipped its first 386-based notebook system, Compal also managed to demonstrate its first notebook model in a US exhibition. At that time, LCD supply was shortening. But, through its parent company's long term relationship with Japan's suppliers, Compal was able to bring the notebook prototype

into mass-production, though it still took considerably longer. In a sense, its relatively high connection to the technology paradigm drove Cal-Comp's search for PC manufacturing. But its low reliance on the policy style restricted the willingness of the group to create a much larger firm under the name of Cal-Comp. Instead, the groups created another company - Compal - as a strategic response to tax incentives. When pursuing a focus strategy, all these firms - *Twinhead*, *Clevo* and *Compal* - had much in common. By mobilising immediate resources to reinforce their positions, they followed the technology paradigm search for integration into similar kinds of economic activities.

In addition, the creation of Compal leads us to consider the logic of the policy style, as well as of the technology paradigm which help explain the diversification strategy. Before 1992, *Elitegroup* was most conservative, keeping out of PC systems while solidly defending their core motherboard business and expanding the works. The relatively low level of its connection to technology operators constrained the course of diversification action. But the company's identity changed substantially after 1993 when it invited Dr. Frank Huang, a member of the KMT's informal sub-association, to act as the chairman with his company shareholding less than 1 per cent. Since then, Elitegroup has intensively diversified into PC peripherals and, particularly, semiconductors (*Central Daily News (Int'l)*, 2 Dec. 1994: 8). This choice of integration growth strategy was clearly facilitated by its strong connection to the policy style.

So far I have discussed a variety of diversifications which were policy style, business recipe or technology paradigm oriented. I have also touched on some examples of the modes of systemic conflict that disrupted firms' conformity to the three structures. Finally, I want to discuss the cases of the big three - *FIC*, *Mitac* and *Acer*. Among my case firms, FIC has the strongest connection to the business recipe. Mitac has the strongest connection to the technology paradigm, and Acer is much more

related to the policy style than are the other 8 firms. However, the relatively high level of recipe connection did not facilitate *FIC*'s opportunistic diversification which was substantially constrained by its considerable links with the technology paradigm. In comparison, the relatively high connection to the technology paradigm did not drive *Mitac*'s strategy towards reckless pursuit of integration or acquisitive growth, such as that pursued by Acer. This pursuit was constrained by Mitac's strong connection to business recipe which discouraged the strategy of growth by integration. Both FIC and Mitac are PLCs and subsidiaries of business groups, and their owners were once educated in the US. The high connection to the business recipe and technology paradigm, together with their relative distance from the policy style (when compared with Acer) led both firms to pursue carefully integration or acquisitive growth strategies. On the other hand, the relatively high level of dependence upon Taiwanese policy style led Acer to face the problems of committing too many resources to the pursuit of growth.

After being floated on the stock market in 1988, *Acer* had expanded with a series of increasingly rash acquisitions. In 1990, through a government incentive programme, Acer managed to acquire an interest-free loan of US\$20 million to partly fund its acquisition of Altos. In general, although Acer's choice of diversification may be a result of the company's conformity to the state search for national champion, the logic of policy style may not always be the initial motivation for its investment.

During 1988-1990, the series of acquisitions coincided with the emergence, for the first time, of professional management at Acer and the inability of top management to absorb and manage its growing capital structure. In 1988, Acer's initial public offering empowered the company with the necessary resources to reinforce its overseas acquisition strategy, at least three acquisitions and one heavy investment following forthwith. In 1989, "in a move to further strengthen Acer's position in the computer market", Stan Shih invited a former senior manager from IBM, Dr. Leonard

Liu to join Acer with Dr. Liu acting as president of Acer and chairman and CEO of Acer America¹². This invitation certainly increased Acer's connection to the technology paradigm. On the suggestion of Dr. Liu, Acer took over Altos, a San-Jose-based manufacturer of multi-user system, at a cost of US\$94 million. Acer's acquisition of Altos has been the largest overseas deal of any Taiwan PC firm, with a senior manager at FIC stating that "with the money, you can buy a PLC in Taiwan". To summarise, not only did Acer's high connection to the policy style encourage its tendency towards acquisition, but its association with Dr. Liu temporarily resulted in its reinforcing connection with the technology paradigm which subsequently drove Acer into the search for a growth strategy by integration.

8.7 CONCLUSION

The purpose of the research reported in this thesis is to build and test a framework of ideas, by reference to which I explain why firms pursue different strategies. Basically, I argue that strategy-making is channelled through social structures that offer a variety of social rules and resources for guiding and empowering firm behaviour. After a long theoretical and empirical journey, I now want to look at some of the implications of the above analysis in so far as it informs our thinking about how PC firms made their strategic choices in their immediate industry system.

A glance again at Figure 1.1 (page 14) will be useful in helping us go through this whole journey very quickly. In Chapter 1 I argued the relative failure of economics to explain strategy because of the socially-embedded nature of economic action. This kind of argument calls for the use of sociology to analyse firms' behaviour in order to help reconcile society with agency. Because society embodies a wide range of social rules and resources, firms are able to draw upon a multiplicity of structural sources to

¹²Dr. Liu resigned in 1991 as a result of huge losses of Acer America.

guide and empower their strategic agency. In Chapter 3 I suggested three sets of structural sources, namely policy style, business recipe and technology paradigm. The structures as a whole are not effectively integrated, but are more or less conflicting. In order to examine the significance of social conflicts in structuring firm behaviour, I suggest that there is an industry system which represents a type of social formation produced by the intersection of policy style, business recipe and technology paradigm. Though influenced by the same industry system, firms retain an assumed capacity to compete and cooperate in the system. Recalling Giddens (1984), society is the product of the human activity it makes possible. In this sense, firms, as social actors, can draw upon plural rules and resources in the production, reproduction and development of their industry.

While recognising the significance of this agentic potential, this thesis further argued that firms are socially constructed with diverse forms of systemic links to the three structures - policy style, business recipe and technology paradigm. Together, the links constitute firms' identities which not only provide the institutional link between structure and agency, but also serve as the driving force for the growth of the firm. Put simply, because identities are different, firms adopt different strategies. It is from these points that I argue "firms within the same industry and country can act differently from one another, and are able to sustain their divergent strategies".

Again, this thesis emphasises that strategy involves choices which mobilise a variety of social structures and thereby contribute to the possibility of their "doing otherwise". The empirical work presented in chapters 5 (social structures), 6 (industry system), 7 (corporate identities) and 8 (strategic choices) provides some support for this set of ideas. As we saw in my case studies, *Acer* benefited from a policy style which had often favoured *de facto* industrial leaders. So with values drawn from patriotic demands for a national champion to reinforce its global vision, Acer has

pursued strategies of own-brand, leading innovation and integration/acquisitive growth. All these strategies were largely policy style-driven.

While related to various business groups, *Mitac*, *FIC* and *Compal*'s advantages depended heavily on the business recipe. Because of their relatively high link with the recipe, they have put emphasis on OEM production and avoided acquisitive growth strategies. In addition, strong connection with the technology paradigm has driven Mitac and FIC to avoid I.P.R. violations, typical of the business recipe. In turn, ASI's relatively greater distance from the policy style and technology paradigm drove its strategy for opportunistic diversification and, sometimes, counterfeiting activity.

The relatively close connection with the policy style drove *Twinhead* to commit itself to own-brand strategy and avoid opportunistic diversification. In contrast to Twinhead, the low level of policy style connection and the relatively high level of its dependence on the business recipe drove *Clevo* and *Compal* towards an OEM strategy and investment in south-eastern countries. Tensions between the technology paradigm search for focus and the business recipe tendency towards opportunistic diversification considerably distracted *AUVA*'s strategic conformity. By inviting Dr. Frank Huang to chair the company, *Elitegroup* increased its connection with the policy style. This high connection facilitated its strategy towards integration into related PC peripherals, but this connection also put pressures on its tendency towards investment in China which was consistent with business recipe.

All in all, throughout the interaction of my theory of ideas and nine PC firms' behaviour, it is evident that "*firms are socially structured with different identities and therefore they will respond differently to their immediate economic and social environments*". While providing an institutional link between agency and structure, the firm's identities are a product of the firm's structural relationships that are related to institutional rules and resource for guiding and empowering the firm's behaviour. As

discussed in chapters 1, 2 and 3, it is this combination of structure and agency that serves as a more robust link between society and strategy than economists and institutionalists provide. The implications of the empirical results in this general framework are further discussed in the next and final chapter.

CHAPTER NINE: THEORETICAL IMPLICATIONS AND CONCLUSIONS

9.1 INTRODUCTION

The last four chapters addressed how the four conceptual categories - social structures, industry system, corporate identities and strategic choices - can be integrated into a framework capable of explaining why firms within the same industry and country pursue different strategies. After this empirical interlude, I shall in this final chapter return to the theoretical ground-work and consider some of my theory's implications.

In Chapter 1 I provided an overall appreciation of a sociological approach to strategy while arguing the significance of social structures in explaining firm behaviour. In Chapter 2 I reviewed different forms of knowledge - including middle-range theorising, paradigmatic analysis, structurationist sociology and corporatism of political sociology - critical to explaining the evolving Taiwanese PC industry of 1980-93. In Chapter 3 I suggested a tripartite structural scheme of corporate strategy in order to take into account three social structures, namely, policy style, business recipe and technology paradigm. The patterning of the three social structures constitutes an industry system which may exhibit internally conflicting logics. Given the particular structural links that underlie their actions, firms will respond differently to the industry system in order to negotiate the conflict. In particular, the structural links construct firms' social identities, to which a range of social rules and resources is attached in a network of social forces and relations, critical to strategic choices. These elements make up the main dimensions of my conceptual framework - a tripartite structural theory of strategy, which has proved useful in explaining corporate strategic differences across nine Taiwanese PC firms.

In this final chapter, I discuss the application and generality of this framework and summarise its main arguments. In detail, informed by the framework, the following two sections will provide the strategic implications for, respectively, managerial action and governmental industrial policy. That done, I shall discuss the generality of my theory of strategy, and conclude this thesis by summarising this theory's implications for our concepts about how firms operate in our society.

9.2 MANAGERIAL CONSEQUENCES

Firms, not nations or industries, are on the front line of international competition. Firms are thus the central concern of the field of Management and Business Studies which is emerging as an important area of social study that reflects the richness and complexity of the modern capitalist world. Clearly, this field is a wide one. But within the area, strategy, or strategic management, is probably central to understand the nature of business competition. Pascale (1990: 54) labels it the king of business disciplines because it "causes us to question the fundamental premises on which all else rests". Despite this, strategy is considered as a "contested and imperfectable practice" (Whittington, 1993, 1; cf. Chaffee, 1985; Crow, 1989; Knights and Morgan, 1990, 1991; Shaw, 1990; Shrivastava, 1986). Recently, rather than assuming the general applicability of US management theories, strategy scholars are beginning to challenge the basic assumptions of management orthodoxy so that "universal, regiocentric, intercultural and cultural-specific theories and research (can be) clearly demarcated" (Boyacigiller and Adler, 1991: 262; cf. Whitley, 1992a: 1; Whittington, 1993). It is from this position that I argued in chapters 1, 2 and 3, suggesting that the subject of strategy has suffered from the neglect of obvious roots in sociology and in philosophy. My job in this thesis then is to deal with this challenge. Overall, it is in this thesis that I was not only to establish an alternative strategy

framework for understanding *what was already known*, but also to collect new information (based on the emerging industry of microcomputers) to verify my theory.

Throughout the thesis, I have presented a series of theoretical considerations and empirical evidence that address how society matters for managerial practice. True, certain social actors like firms, as economic members of society, operate in a diversity of social structures. This involves a set of propositions about economic actors: they are deeply embedded in the structures of society by which to justify and empower their actions. Such advocacy of a sociological approach to strategy arms managers with "sardonic self-awareness" (Whittington, 1993: 136), providing that strategic decisions depend not only on economic merit but also on social conformity. This stress on social conformity does not imply a deterministic position, because the diverse and contradictory nature of social structures provide firms with a range of social rules and resources that permit strategic choice and difference. In this respect, my tripartite scheme of corporate strategy suggests three sets of social structures - policy style, business recipe and technology paradigm, each capable of generating different patterns of strategy. In short, where social structures are diverse, firms are able to use the broad environment to gain their agency.

For instance, accepting the pervasiveness of political power in market economies, global firms in Taiwan, like Kennex¹ in tennis racket manufacturing and Acer in microcomputer, define themselves as national champions to secure the support of the state. In 1988, the state helped Kennex solve its financial crisis. As we have seen in the previous four chapters, global strategies such as those of Acer, need not rely just on capitalist resources and technological rationalities; they may draw on state subsidy and support. As we would expect, both Kennex and Acer are among the five firms (the other three firms are Giant in bicycles, Sanyang in motorcycles and Proton in TVs)

¹Kennex is the number one tennis racket manufacturer in Taiwan. It also owned a PC subsidiary firm - Arche, holding a significant place in the French market.

featured in an aggressive advertisement promotion begun in 1993 by the state (Pennells, 1994) (see Appendix 6). Another case of Taiwanese micro-corporatism in the early 1990s is the promotion by the state of native-owned Eva Airline (a subsidiary of Evergreen), denying a monopolistic position to mainlander-operated China Airline. In particular, all the three firms - Kennex, Acer and Eva Airline - have at least two things in common. They are native, and are able to grasp the political tensions between the mainlander and Taiwanese (during 1987-1993) as an opportunity to achieve their political advantage.

Bearing this point of sociological sensitivity in mind, a truly dynamic advantage is based on effectively mobilising plural resources within society to create competitive advantage rather than simply accepting advantage as "industry given". For practising managers to compete effectively in the industry, they should therefore sensitize themselves to the institutional sources of their social identities, play reflexively the rules of game and open up to the resources of policy style, business recipe and technology paradigm.

9.3 THE CONSEQUENCES FOR STRATEGIC INDUSTRY POLICY

An important aspect of my tripartite framework of strategy analysis is the range of policy style available to government and political leaders. If governments are able to manage industrial development, the question is how, that is, by what strategies they go about doing it. A typical strategy to meet this challenge is to "pick winners" (cf. Porter, 1990: 673-5; Wade, 1990: 334-7). In so doing, governments can single out either individual firms or particular industries for support and development (cf. Cawson, 1986: 106-25; Williamson, 1989: 144-67).

However, in considering the prospect of state direct support of individual firms, many researchers do not support this way. For example, following a major study of the development of corporate life cycles, Mintzberg (1984: 221) proposes a healthy industry structure "to be one that sustains a steady level of replacement of old, spent organizations by young, energetic ones". Instead of assisting large firms, government policy in this way should be aimed at killing them off and encouraging the "younger, smaller, less constrained and more vibrant ones" (Mintzberg, 1984: 222; cf. Hendry, 1989: 179). This observation is consistent with Porter's (1990) argument that, in the commercial competition between nations, success is correlated with pressure, and especially with that provided by highly visible and local competitors, rather than protection.

However, since the late 1980s, the increased desire of the Taiwanese state to pursue international reputation has driven its search for national champions. Politically, such a micro-corporatist policy strategy may be necessary in terms of its traditional political isolation. But considered from another point of view, these national champions may barely sustain international success, largely because growth in organisational structure contradicts the fragmented Taiwanese business recipe. As we can see, the once-renowned tennis-rackets firm Kennex has gone through a series of financial crises. Similarly, since Acer's internationalisation, its profits have declined sharply, suffering heavy losses in 1991 and 1992.

If micro-corporatist favouring of particular firms faces strict limitations, then a meso-corporatist policy strategy may be pursued by policy makers. This stress on a more sectoral focus leads governments to choose a particular industry in which any firm has the opportunity to prosper. The issue, then, is how to choose. As we go through the empirical data of the thesis, it seems that nations are most likely to succeed in industries where the interaction of structures is most favourable. Two examples can illustrate this point. First, as discussed in Chapter 6, benefiting from a favourable

patterning of social structures, Taiwan's PC industry demonstrates more competitive advantage than Korea's PC industry. Secondly, within the national context, Taiwan's HDD industry has been far less successful than its PC industry. The small business organisations, typical of the Taiwanese business recipe, critically contradicts the dominant HDD technology paradigm which is mainly around a limited number of large firms with relatively *constant* technology in the field of the combination of electronics and metals (Yih, 1992: 10-1; Chou, 1991: 15). Within Taiwan's education system, this field has been traditionally neglected by the state.

Comparatively, Taiwanese PC assemblers may have not been leading technological innovators themselves. But their small size in organisations (business recipe) and pools of engineering professionals (policy style) has interacted synergistically with the dynamic impetus of technological discontinuities, typical of the PC technology paradigm. Therefore, to a considerable extent, the mutual enforcement of the business recipe and policy style enables these PC firms to adapt quickly to new technologies pioneered elsewhere. As a result, although the HDD and PC industries share strong boundaries with nation states, each of them develops their own structural patterning. In so doing, the Taiwanese PC industry utilises and modifies existing policy style and business recipe better than the HDD industry. In this way, hypothetically, I suggest that the more effectively the three structures integrate, the more successful the industry would be.

Recently, the Taiwanese state has chosen aerospace as a strategic industry for promotion (Liu, 1993: 52-3). My theory does not support this policy choice. The aerospace industry is characterised by large, capital intensive and professionally managed firms, something uncharacteristic of Taiwan. Instead, the state should choose an industry that is more likely to fit the highly diversified industry organisation, typical of the Taiwanese business recipe. Additionally, the state should exclude an industry whose technology paradigm is mainly around national champions. This is because

Taiwan's political isolation does not support its search for inter-firm cooperation at the state level. In a sense, perhaps Taiwan's industry policy makers should continue to identify the highly growing information technology sector as an important priority.

9.4 CONCLUSION ABOUT FIRMS AND SOCIETY

9.4.1 Generalisability

In order to develop a more robust organisational science, Boyacigiller and Adler (1991) suggest that scholars need to clearly examine the generality of their theories. In this respect, research which relies on case study design may be more vulnerable to the charge of limited generality than that of statistical surveys. But, still, case-study-design research is likely to discover relations and properties which are general or widely applied, although exactly how widely is only determined through empirical study.

In order to examine strategic differences across nine Taiwanese PC firms, I develop a tripartite structural theory of strategy. This theory mainly concerns three social structures - policy style, business recipe and technology paradigm, which constitute my case firms' immediate society. Although these are not the only ways in which society is structured, I have demonstrated these three structures are particularly important in explaining the strategic choices of my case study firms.

In considering the cultural and geographical domain of the theory, the distinction of policy style and business recipe is generally applicable to nation states which are semi-autonomous in the business community. After 1997, for example, Hong Kong will certainly develop a new type of policy style whose interaction with Chinese family business recipe is central to understanding the development of this

area's firm behaviour. In addition, the significance of policy style in structuring firm behaviour is less clear in countries such as the UK and the US which generally see political influence as equal for every individual firm. In this sense, firms are less likely to identify with state policy in order to access resources (in comparison with firms operating in a corporatist political structure such as Taiwan's case during 1987-1993).

In considering the sectoral domain of the theory, it appears to me that, in service industries, such as banking, securities, insurance and travelling, the technology paradigm is less important in structuring firm behaviour than in manufacturing industries. In Taiwan's case, for example, these service industries are mainly domestically-oriented. This led them to be less likely to sense the significance of a world-wide technology paradigm than export-oriented ones, such as PCs and textiles. In turn, largely because they are domestically-oriented, most of Taiwan's service industries are likely to recognise the benefits of political advantage and the importance of local business networks.

Although the significance of the three social structures in explaining firm behaviour is not equal in every industry system, the sociological appreciation of strategy is fundamentally crucial. This stress on a sociological strategy view is important, because it suggests that firms have access to a plurality of social structural rules and resources. Strategic choice is thus possible, because this plural account of social structures frees firms from any unique determination. Additionally, strategic difference is viable, as the plural account of social structures widens the focus beyond institutionalists' concern for isomorphism.

9.4.2 Concluding Summary

Throughout the thesis, I develop a middle-range theory of strategy applied empirically to the Taiwanese PC industry from which nine case firms were drawn. The

basic methodology used for this research is that of structurationist sociology and comparative case studies. The main issue of the thesis is to explain *why firms pursue different strategies and how they are able to sustain them*.

The theoretical work presented in chapters 1, 2, 3 and 4 establishes a conceptual framework - a tripartite structural theory of strategy - in order to take account three *social structures* - policy style, business recipe and technology paradigm. The patterning of the structures constitutes an *industry system* which highlights the significance of systemic conflicts in structuring firm behaviour. In order to negotiate the conflicts, firms have to choose to conform to certain social structural rules and resources. Here, choice is possible, because in the industry system there is more than one social structure providing social rules and resources for guiding and empowering firm behaviour.

While recognising the possibility of choice, the thesis continues to argue that this agentic potential of doing otherwise is different for each company. The difference is a product of *corporate identities* which establish firms' structural links with their attendant industry system and so provide them with both access to specific social resources essential to strategic choice, and certain particular rules about how to exercise their choices. Consequently, the concept of corporate identities provides an institutional linkage between structure and agency and it is through this linkage that we examine how firms can make a difference to their *strategic choices*. To summarise, the thesis has argued that social structures, industry system, corporate identities and strategic choices need to be integrated in a complex framework in order to understand the formation of firms' divergent strategies within society.

In addition to the theoretical work, the empirical work presented in chapters 5, 6, 7 and 8 provides some tentative support for this set of patterns. In Chapter 5, I introduce some aspects of the three social structures which are particularly important

to the evolving Taiwanese PC industry of 1980-93. The structures include the Taiwanese policy style, the Taiwanese business recipe and the PC technology paradigm. The patterning of the three structures constitutes the system of Taiwan's PC industry discussed in Chapter 6. In Chapter 7, I establish the broad similarity and differences of corporate identities of my nine case PC firms and these identities are subsequently used for examining the different strategic choices discussed in Chapter 8. Finally, this study of structures, system, identities and choices suggests a number of conclusions for the analysis of corporate strategies which can be summarised as 6 separate points:

1. The failure of economics to explain strategy is rooted in a neglect of agency which concerns occasions at which firms could have acted differently in their immediate society. The Structurationist social theory of Anthony Giddens can provide an affirmation of firms' strategic agency by which the relationships between firm and society can be better illuminated.
2. Appreciation of social structures, or social institutions, is critical to explaining firm behaviour. The structures comprise a plurality of social rules related to strategy content and social resources associated with structural bases of power. This perspective on firm-society relationships implies the rule-following and resource-empowered nature of corporate strategy.
3. Current organisational sociologists may have studied the dynamics of social structures, but they have tended to play down firm differences and so imply a deterministic position. Within the area of strategic management, firm difference matters. In order to assert firm difference, we have to appreciate the diverse and contradictory nature of social structures by which to justify strategic agency.
4. Strategy implies choice by its very nature. Within an industry, it is observable that in fact many viable strategic paths are taken and no single one is necessarily superior to the firm itself. Strategic choice is possible, as social conformity permits

organisations to have access to a variety of forms of legitimacy, allowing the acquisition of diverse resources capable of sustaining action.

5. The three social structures - policy style, business recipe and technology paradigm - have proved important in explaining firm behaviour in Taiwan's PC industry. All three of the structures are interconnected, and each generates different social rules and resources.
6. Strategy implies difference, as corporate identities establish firms' social positions that will cause them to make strategic choices differently from one another within their attendant industry system. Corporate identities, while providing an institutional link between structure and agency, serve as the driving force for the growth of the firm whose ability to choose derives from the structures of the society.

To conclude, appreciation of the diverse and contradictory nature of social structures is critical to explaining corporate strategic difference.

Appendix 1: Introductory Letters to Case Firms and Interviewees

I.

15 MARCH, 1993

MR STAN SHIH
PRESIDENT, ACER SERTEK INC.
NO.135, SEC. 2, CHIEN KUO N. RD.,
TAIPEI, TAIWAN, R.O.C.

Dear Mr Shih

This is to introduce Mr Shih-Chang Hung who is currently a PhD student in Marketing and Strategic Management Group of the Warwick Business School of the University of Warwick. Mr Hung is doing his doctoral thesis on the strategic development of Taiwanese companies in the microcomputer industry. Further information is enclosed.

Taking you as one of the Taiwan's leading PC firms, we are very interested in learning about your company's experience in this industry. Your contribution is most important both for understanding Acer's performance and on account of your personal reputation in the microcomputer industry. We would be very grateful, therefore, if you could assist when the researcher starts his field-work (May - July) in Taiwan. This will involve three or four interviews of about 30 minutes each with nominated managers and a visit to your factory. All data will be treated confidentially.

As the supervisor of this research, I wish to express my appreciation for any assistance you may be able to give.

Again, thank you very much.

Yours sincerely

Dr Richard Whittington
Senior Lecturer in Marketing
and Strategic Management

II.

RESEARCH DESCRIPTION:

Title: PC Company Strategies in Society: State, Business and Technology

The thesis is examining the development of the Taiwanese personal computer business in its social context. It focuses on how business culture, political intervention and technological resources interact to create successful business strategies in the personal computer industry. Typical Taiwanese firm strategies of production, marketing, distribution, financial and human resource management will be compared with other international firm strategies.

The research will be carried out by a series of comparative case studies. The development of strategies will be analysed historically and comparatively. Data will be drawn from interviews, company tours and documentary sources. All data will be treated confidentially.

The outcomes of the research will be three-fold. First, the research will help managers analyse the social context of their business, the better to take advantage of local conditions and understand those of competitors. Second, the research will produce recommendations for government policy to aid the development of the personal computer industry. Finally, it will contribute to the emerging academic understanding of the relationship between strategy and society.

All participants will receive a brief summary of the final research findings.

About the Researchers:

The researcher, *Shih-Chang Hung*, completed his B.B.A. and M.B.A. degrees in Taiwan and is currently a doctoral student at Warwick Business School of the University of Warwick, starting in September, 1991.

Dr. Richard Whittington, the supervisor of this research, is currently a Senior Lecturer in Strategic Management teaching on MBA, executive and doctoral programmes. He has published articles on strategy, marketing and small firms, and is also the author of *Corporate Strategies in Recession and Recovery* and *What is Strategy - and Does it Matter?*

Warwick Business School is ranked as one of the top two research business schools in the U.K.. It is closely involved with industry not only through its research, but also through an extensive programme of post-graduate and post-experience courses.

Appendix 2: Original Data Sources: Interviews, Company Tours, and Attendance to Conferences and Speeches by Industrial Observers and CEOs of Case Firms

I. Field Interviews and Personal Contacts to Case Firms and the Industry (Alphabetically ordered by names)

Chang, Amy, Special Assistant, *TCA*. 7/5/93: 11:45-11:55 (N¹).

Chang, Li, Manager, *TCA*. 7/5/93: 10:30-11:45 (Y).

Chao, Eddy, Director of Marketing Dept, *Twinhead*. 23/7/93: 14:10-15:15 (Y).

Chen, E.C., Former Quality Manager, *Everrex* (USA); Senior Buyer at International Procurement Office, *Philips, Taiwan*. 25/2/94: 18:00-19:30 (N).

Chen, David, Director for Finance Dept., *Twinhead*. 3/7/93: 15:45-16:00 (Y).

Chen, Wee-son, Director for Manufacturing, *Clevo*. 22/6/93: 14:00-15:50 (Y).

Chiang, Stanley, Chairman & President, *Twinhead*. 28/7/93: 17:00-18:15 (Y).

Chien, Bob, Manager for Finance Dept., *Twinhead*, 3/7/93: 16:00-16:35 (Y).

Chin, John T.H., Senior Staff of President's Office, *Twinhead*, 6/5/93: 15:00-16:10 (N); 13/7/93: 14:10-15:10 (Y).

Du, Enoch, General Secretary, *TCA*, 2/9/92: 09:30-10:30 (N); 5/5/93: 11:00-11:50 (Y).

Gau, J.M., Director, *FIC*. 20/1/94: 16:10-17:00 (Y).

Ger, Jy-gang, Section Chief, *IDB, MOEA*. 27/5/93: 9:00-10:00 (Y).

Ho, Nancy, Manager for Marketing, *FIC*. 18/1/94: 11:15-12:00 (Y).

Huang, Jonny, Journalist, *Economic Daily News*. 10/1/94: 18:30-19:20 (Y).

Huang, Thomas, Project manager, MIC, *III*; Former Product Marketing Manager, *Acer*. 26/1/94: 2:50-3:30 (Y).

Lai, Alex, Supervisor for Production and Planning Dept., *AUVA*. 28/1/94: 1:50-2:30 (Y).

Lee, Arnold, C.M., Analyst of Security Investment Dept., *Cathay Life Insurance Co., Ltd.*. 31/12: 16:00-17:00 (Y).

¹N means the interview is not tape recorded whereas Y means yes.

Lee, Daniel, Senior Vice President, *Inventa*. 10/6/93: 13:20-14:00 (Y).

Lee, Ing-jen, PhD, Vice president & General manager of R&D and sales division, *Twinhead*. 27/7/93: 10:30-11:55 (Y).

Lee, Jen-fang, Professor of Graduate Institute of Management School, *Fu-Jen Catholic University*. 3/5/93: 14:00-14:30 (N).

Lee, Percy, Supervisor, *Clevo*. 5/1/94: 15:00-15:50 (Y).

Lee, Terrisa, Administrator, *Clevo*. 22/6/93: 14:00-15:50 (Y).

Lin, Andrew, Director for Administrative Dept., *Sampo Tech*. 31/5/93: 15:00-15:30 (Y).

Lin, Augustus Y., Vice President, *ASI*. 10/6/93: 10:20-11:30 (N); 4/1/94: 10:00-11:00 (Y).

Lin, Chao-tang, Senior director for Tamsui factory, *Elitegroup*. 15/7/93: 14:00-15:10 (Y).

Lin, Edward, Manager for Administrative Dept., *Twinhead*. 3/7/93: 16:40-17:10 (Y).

Lin, Frank, Sales Specialist, *FIC*. 18/1/94: 11:00-11:15 (N).

Liu, Paul, Chairman, *ASI*. 21/1/94: 16:40-17:40 (Y).

Lu, Gazy, Manager for Accounting & Spokesman, *Compal*. 28/6/93: 15:30-16:20 (N); 5/1/94: 14:00-15:00 (Y).

Lu, Lawrence, Vice President of Manufacturing, *Mitac Europe*. 7/4/93: 15:00-16:30 (Y).

Lu, Tom, Supervisor for Manufacturing Division, *Twinhead*, 3/7/93: 14:00-14:30 (Y).

Ou, Jackson, Vice President of ADM headquarters, *Clevo*. 22/7/93: 14:40-15:25 (Y). 5/1/94: 15:50-16:00 (N).

Peng, Philip, Vice President, Corporate Finance & Investment Management, *Acer*. 24/1/94: 3:00-4:00 (Y).

Ping, Marian, Industry Analyst, *MIC, III*. 12/5/93: 16:30-17:50 (Y).

Sheu, Lai-fa, Division Director, *IDB, MOEA*. 21/5/93: 8:30-9:00 (Y).

Shieh, Hong Ji, Director for Engineering Dept., 2nd Factory, *FIC*. 5/1/94: 11:00-12:00 (Y).

- Shih, S.P., Vice President for Manufacturing Division, *Twinhead*. 3/7/93: 14:55-15:40 (Y).
- Song, Simmon, Supervisor for Overseas Supporting Dept., *AUVA*. 28/1/94: 14:30-15:00 (Y).
- Tang, Eric, Journalist, *Commercial Times*. 11/1/94: 1:50-3:30 (Y).
- Tsan, Wen-nan, Manager, *MIC, III*; Former Product Manager, *Acer*. 12/5/93: 16:30-17:50 (Y).
- Tu, Tze-chen, Director, *MIC, III*. 24/8/92: 11:00-12:00; 24/5/93: 14:00-15:00 (N); 24/5/93: 14:00-15:00 (Y).
- Wang, Josephine, Specialist for Public Relations, *Acer*. 26/5/93: 14:10-14:30 (N).
- Wang, Peter Fu-ching, Division Director, CCL, ITRI; Board of Director, *TCA*. 21/7/93: 13:10-14:30 (Y).
- Weng, John, Assistant Vice President for Sales Division, *AUVA*. 29/6/93: 13:55-14:30 (N); 28/1/94: 3:30-3:20 (Y).
- Woo, Jerry, Director for S & M Centre, Marketing Communication Dept., *Mitac*. 13/1/94: 16:15-17:00 (Y).
- Wu, Allen, Managing Director, *Twinhead, U.K.*. 225/3/93: 14:00-15:30 (Y).

Table 10.1 Formal Research Interviews

	Interviewing time (minutes)
Industry-level analysis ¹	635
Acer	265
Mitac	180
FIC	201
ASI	140
Clevo	225
Twinhead	590
Compal	140
AUVA	125
Elitegroup	380
Totals	2,885

Note: (1) Industry-level analysis includes research into the social structures and cross-agents (state and firms) investigation.

Wu, Walt, Supervisor for Administrative Dept., *Twinhead*. 3/7/93: 14:00-14:30 (Y).

Yeng, Gilbery, Senior Director for Procurement Division; Board of the Director, *Elitegroup*. 16/6/93: 13:30-15:30 (Y); 8/7/93: 14:10-16:00 (N); 27/1/94: 3:00-4:00 (Y).

Yen, K.M., Senior Staff of Presidential Office, *Compal*. 18/1/94: 16:15-17:00 (Y).

Yin, Nancy L.F., Manager, *TCA*. 26/6/93: 11:25-11:55 (N).

Yu, Cheng-kung, President, *Yunlin Polytechnic Institute*; Former Director for Computer Institute, *the Ministry of Education*. 24/8/92: 15:30-14:10 (N).

II. Tours to Computer Exhibitions and Attendances to Conference and Speeches (Arranged by Date)

28/5/93: 9:00-17:00 (N); Attending the Seminar of 'Information Industry Development and Market Opportunities in the East/Pacific Region', held by MIC, III.

1/6/93: 14:00-16:00; A tour to 'Taipei International Computer Show'.

3/6/93: 14:00-16:00; A tour to 'Taipei Computer Software Show'.

7, 8, 9/6/93: 9:00-17:00 (N); Attending the Conference of 'Computer Technology 1993', held by ITRI & ITIS.

22/12/94: 12:00-17:00; A tour to 'Taichun Information Exhibition'.

12/1/94: 14:00-15:40 (Y); Attending the Speech by Stan Shih, Chairman of *Acer*.

13/1/94: 14:00-15:40 (Y); Attending the Speech by T.C. Tu, Director for *MIC*, III.

18/1/94: 14:00-15:40 (Y); Attending the Speech by Alpha Wu, President of *MAG Innovision* (Monitor).

19/1/94: 14:00-15:40 (Y); Attending the Speech by W.N. Tsan, Manager for *MIC*, III.

20/1/94: 14:00-15:40 (Y); Attending the Speech by M.T. Sheun, President of *UMC*.

21/1/94: 14:00-15:40 (Y); Attending the Speech by Dr Frank Huang, Chairman of *Elitegroup*.

Appendix 3: Secondary Data Sources in the Field²

(1) Relevant libraries with regard to the research

Information and Computing Library, National Central Library [Address: 13F, 106, 2nd Section, Ho-ping E. Rd., Taipei; Tel: 886-2-737-7737]

Library of Chinese Security and Future Markets Developmental Association
[Address: 9F, 3, Nan-hai Rd., Taipei; Tel: 886-2-397-1222]

Library of Economic Research Institute of Taiwan [Address: 11F, 178, Nan-king E. Rd., Taipei; Tel: 886-2-713-6959]

Library of Economic Research Institute of Chinese [Address: 75, Chang-hsing Street, Taipei; Tel: 886-2-735-6006]

Library of Institute for Information Industry [Address: 10F, 106, Ho-ping E. Rd., Taipei; Telephone: 886-2-7377157]

National Central Library [Address: 20, Chung-sun S. Rd., Taipei; Tel: 886-2-361-9132]

Science and Technology Data Centre, National Science Council, Executive Yuan
[Address: 14-16F, 106, Ho-ping E. Rd., Taipei; Tel: 886-2-737-7631]

(2) Lists of industrial journals, periodicals, magazines, and newspapers³ used in the research

Asian Finance

Asian Computer Monthly

Business Week

Business Weekly (in Chinese)

²For a full catalogue of Taiwan, ROC government statistical publications, refer to *Republic of China Yearbook, 1991-92* (1992: 643-7).

³For a detailed directory of Taiwan major newspapers, refer to *Republic of China Yearbook, (1992: 630-1)*.

Commercial Times Newspaper (in Chinese)

Common Wealth (in Chinese)

Computer Review

Computerworld

Computerworld, Taiwan (in Chinese)

Computrade International

Datamation

Newsletter for Information Industry (by MIC, III) (in Chinese)

East Asia High Tech Review

The Economist

Economic Daily Newspaper (in Chinese)

Electronic Business

Electronic Business Asia

Electronic Business Buyer

Far Eastern Economic Review

Information World Review

Inforworld

PC Magazine

PC Week

PC World

Taiwan Computer Suppliers (by TCA, June 1993)

Appendix 4: Case PC Companies' Performance:

(1) *Turnover* (NT\$1,000);

(2) *Profit margin* (pre-tax) (NT\$1,000);

(3) *ROE* (%)

	1988	1989	1990	1991	1992
Acer	10,846,209 783,843 24.4	12,937,669 170,730 2.38	12,453,449 49,828 0.73	11,923,246 (607,366) (7.18)	12,242,222 (55,951) (0.68)
Mitac	3,310,584 199,134 41.28	4,068,999 251,205 23.78	5,067,025 247,236 12.49	6,046,454 (73,362) (2.97)	4,471,770 (696,802) (33.07)
FIC	1,123,336 45,531 28.42	1,356,873 126,708 22.60	3,125,332 203,812 23.02	5,115,084 201,502 19.64	8,629,811 301,249 17.42
ASI	586,153 10,945 7.63	669,350 9,346 2.89	1,565,988 48,656 11.12	2,063,385 905 0.02	2,888,995 40,132 6.47
Clevo	287,586 2,418 3.39	646,853 30,401 26.96	1,751,257 211,774 76.90	1,888,874 93,988 20.35	3,303,410 191,496 32.13
Twinhead	845,694 40,469 42.02	1,902,341 21,064 11.26	2,938,298 10,524 1.76	3,822,063 88,642 7.92	4,034,635 156,977 1.17
Compal	2,095,394 66,938 17.95	2,449,468 83,685 41.82	3,211,060 125,020 55.22	4,110,857 172,795 12.25	4,628,420 (81,053) (6.06)
AUVA	678,954 43,391 30.09	2,199,160 55,209 13.24	2,789,032 84,425 11.96	2,675,551 30,278 3.17	3,058,516 11,770 0.62
Elitegroup	460,557 8,983 40.45	1,682,980 180,112 99.34	3,620,877 633,421 105.55	3,930,995 130,444 15.67	5,030,687 163,562 16.03

Appendix5: Statutory Bodies - ITRI and III

The industrial policy for the information sector among other strategic industries was formulated and implemented in a "strategic" path, implying that it was through "administrative order" authorised by Administrative Yuan. The Legislative Yuan was therefore relatively absent. This situation was only changed after 1993 when the opposition party gained about one-third seats in Legislative Yuan. Since then the role of "statutory bodies" in allocating state R&D resources has been questioned, in that not only were these institutions increasingly becoming shelters for the retired government officials, but also they were starting to compete with the private industry in the allocation of government scientific budgets.

However, over the years, it is true that the state was deeply involved with the industry. Through the public research organisation rather than with any existing large private organisation, the state was pursuing a growth strategy for the information industry which is of economic significance to legitimate the political system of sovereign rules. In examining the distribution and responsibilities between different levels of state authorities, certain aspects of the KMT state machinery were particularly important to the way in which state and PC firms interact. Amongst these institutions, the "Industrial Technology and Research Institute" (ITRI) and "Institute for Information Industry" (III) are important to be worth singling out for discussions because of their specific functions.

Industrial Technology and Research Institute (ITRI)

The dominant feature of small and medium-size enterprises in Taiwan's industry has limited industry's R&D capacity. For example, advanced semiconductors require an initial investment of at least US\$100 million (Bello and Rosenfeld, 1990: 271). Over the 1970s and 1980s the government intensified its efforts to widen an R&D capacity

for the new growth sectors. During the 1980s, about 46 to 63 per cent of total R&D spending was undertaken by the government (36 to 47 per cent by government agencies, 9 to 18 per cent by public enterprises), 33 to 52 per cent by private enterprises, and less than 1 per cent by the foreign sector (Table 10.2).

Table 10.2 R&D expenditure by types of organisation , 1981-1991

Period	Total Expenditures (NT\$ 1m)	R&D Expenditures/ GNP (%)	Government (%)	Public Enterprises (%)	Private Enterprises (%)	Private Foundations (%)	Foreign Enterprises (%)
1981	16,414	0.93	36.6	16.1	41.9	5.2	0.2
1982	16,864	0.89	43.1	15.1	38.4	3.0	0.4
1983	19,200	0.91	44.0	16.3	36.8	2.8	0.1
1984	22,444	0.95	47.4	15.9	34.5	1.4	0.9
1985	25,397	1.01	45.5	18.0	33.7	1.7	1.1
1986	28,702	0.98	42.1	18.0	38.7	0.7	0.5
1987	36,780	1.12	36.0	14.8	47.6	1.0	0.6
1988	43,839	1.22	44.5	12.0	42.0	1.2	0.3
1989	54,789	1.38	35.8	11.9	49.8	2.0	0.5
1990	71,548	1.65	36.4	9.4	52.8	1.2	0.2
1991	81,765	1.38	43.0	9.1	45.5	0.9	1.5

Source: National Science Council (various years) *Indicators of Science and Technology, Republic of China*. Taipei.

A landmark is the establishment of the Industrial Technology Research Institute (ITRI) in 1973. By 1992, ITRI had a revenue of NT\$11.89 billion (of which 8.27 billion was from government projects while 3.62 billion was from private contracts) and a staff of over 5,000, of which 70 per cent were engineers and scientists⁴. The Industrial Technology and Research Institute (ITRI), which is the largest public R&D organisation on the island, plays a critical role in terms of research and development in information technology.

⁴The data of this section were adapted from the annual report of 1992 of the institution and the organisation's pamphlet of *introduction*. I also draw on interviews with senior managers of the institution.

Within ITRI are several specialised institutes; the key one in relation to the information industry is the *Electronics Research and Service Organisation (ERSO)* and after 1990, its newly created subsidiary - *Computer and Communication Research Laboratory (CCL)*⁵. By 1992 CCL had a staff of 965 and a budget of about US\$61.8 million (of which 38.8 million was from MOEA projects whereas 23 million was from business projects). ERSO/CCL operates its own integrated circuit facility and owns a related subsidiary at the HSIP, where foreign and domestic high-technology firms operate in close proximity to ITRI laboratories. Several of the critical innovations that had spearheaded the emergence of Taiwan's integrated circuit industry had come from within the ERSO/CCL laboratory.

In practice, ERSO/CCL assembles groups of interested companies for collective R&D, with the government throwing in a huge chunk of the project funding. Currently the government funds almost half of the electronics R&D in Taiwan. ERSO also supplied financing to launch chip manufacturers, like the United Microelectronic Corporation (UMC), Taiwan's first manufacturer of integrated circuits with a 45 per cent equity share held by five private local firms (Wade, 1990: 104). UMC is Taiwan's largest semiconductor firm which is also starting to develop microprocessors. In 1993, it launched its equivalent of the Intel's 486 microprocessor, currently the fastest chip available to PC firms (Flannery, April 1993).

Although almost all microcomputer firms are privately owned, ERSO/CCL was able to take a leading role with identifying particular items on Taiwan's own production frontier (Hou and Gee, 1993: 397-8). In particular, ERSO/CCL was given responsibility for guiding the development of core technologies and new products, and

⁵ERSO was restructured in July 1990 upon the creation of the CCL in ITRI. The development of computer and telecommunications technology originally conducted under ERSO was assigned to CCL. ERSO laboratories now focus exclusively on the development of key electronic components and related subsystems.

for training microelectronics/computer engineers, some of whom would then move to industry. With responsibility to recruit a foreign partner to help develop and commercialise the technology, ERSO stands between the domestic information firms and the rest of the world for the purpose of facilitating the transfer and assimilation of advanced technologies. Often it licenses foreign technologies itself and then sub-licenses to firms, thus eliminating price-raising competition between firms for the same technology. Generally, it does not seek immediately to license a technology it wants; it buys items embodying the technology, reverse engineers them to see how they work, and then identifies precisely which technologies it needs to license and which it does not.

The institution also acts as a consultant, and has, on many occasions, set up strategic consortia with local companies. In the case of PCs, the co-operation between ERSO/CCL and local firms includes the project of PC/XT, PC/AT, 386/AT, 486/At and the recent notebook development alliance. In the early 1980s, the coalition between ERSO/CCL and local firms operated well since the industry was in its infancy and only a few firms joined the alliances. But the recent joint-venture of notebook development, for which CCL combined 46 local firms to take part, was a failure. In contrast to the early case of PC-400, in which ERSO successfully helped the industry to transfer its technological capacity from manufacturing PC/XT to PC/AT, computer firms complained of the incompetence of CCL which allowed smaller companies to shirk on R&D, and thereby undercut the competition of notebook in the global market.

*Institute for Information Industry (III)*⁶

Even though ERSO has also been active in the software sector, the lead has been taken by the publicly-owned Institute for Information Industry. Founded in July

⁶The data on this section were provided by III. I also draw on interviews with some senior managers of III.

1979 under the supervision of MOEA, the Institute for Information Industry (III) was jointly supported by the state, academic institutions and private companies. There are 42 members on the Board of Trustees, 6 from the government, 7 from the academic community and 29 from the private sector. By the end of March 1992, the III had a staff of 894. Two-thirds of them were IT professionals with expertise in software systems and a legal staff with research and consultancy on intellectual property rights.

At its foundation, the III was a non-profit organisation and its main mission was software development, including providing advice and guidance to state and private organisations. It assisted the overall planning of large-scale information systems, introduced and developed advanced technologies, nurtured information personnel, collected and analysed market information, and helped the government draft the short-, medium-, and long-term development plans for the information industry. In addition, under the sponsorship of the MOEA and in co-operation with various trade associations, it has held an annual Information Month (Formerly, Information Week). The event travels to Taiwan's major cities and since 1990, the show has been attended by over 6,970,000 people.

However, as the information industry became established with more various interest groups in it, the role of III has changed. Today, with a government budget of NT\$688 million (*Commercial Times*, 3 May 1993: 14), the III is still state-sponsored, with a charter to formulate long-term strategies for the development of Taiwan's information industry, but it has evolved into a profit-making public enterprise. It takes up nearly every major software project in the public sector instead of channelling demand to the private sector. The information companies have begun to criticise the III, complaining it is a "coach cum player" who competes with them from a position of favour⁷. Clearly, III's competence is signalled by its state-sponsored status when compared with other small and medium software firms in winning the large-scale, in-

⁷Interviews with senior managers of PC companies and trade associations.

house projects. Largely due to the high failure rates of business organisation, the firms which have to make the purchasing decisions of software-engineering were willing to turn to the largest and most reliable supplier, namely, III⁸. One notable example was the computerisation of the ticket-selling system of Taipei Railway Station. Even in this, the III's efforts to assist firms in dealing with overseas legal battles are still influential.

⁸Interviews with CEO of MIC, III.

Appendix 6: National-Champion Branding

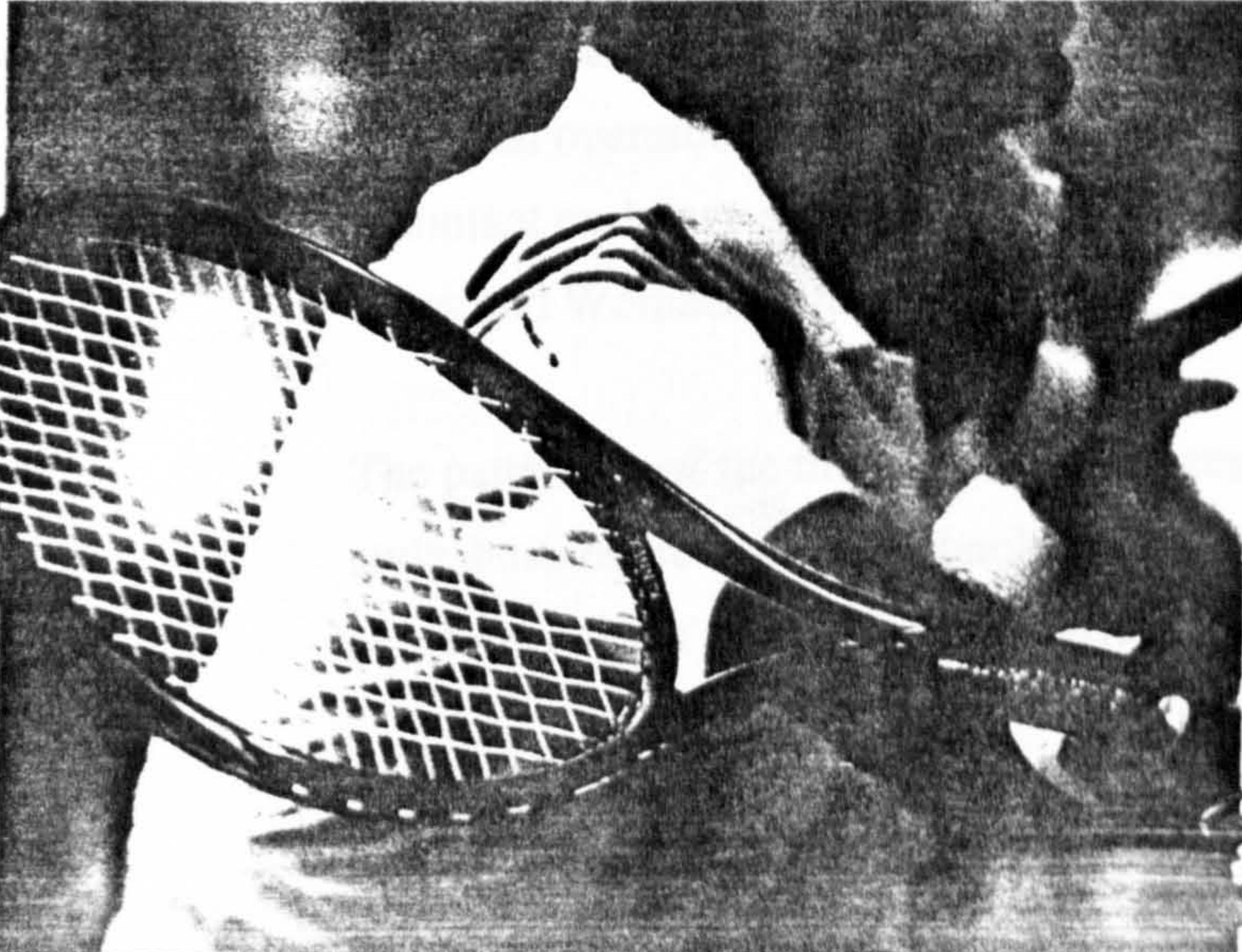
The following two advertisements, among others, have frequently appeared in *Time*, *Newsweek* and other US, European and Japanese magazines since 1993. Just as the cases of Acer and Kennex show, the distribution of state resources can be different to individual firms, hence verifying the possibility of micro-corporatism in Taiwan's case.

Made in Wall Street, Taiwan.



**IT'S VERY WELL
MADE IN TAIWAN**

Made in Wimbledon, Taiwan.



**IT'S VERY WELL
MADE IN TAIWAN**

Appendix 7: Operationalisation of the Key Conceptual Categories of Analysis

This list includes key conceptual categories which are employed to construct my tripartite structural theory of strategy by reference to which I explain why firms made their strategic choices differently. It is intended only to summarise these categories, not to elucidate them further.

Social structure	Rules and resources, implicated in the institutionalised patterns which refer to the ways in how people behave and to the relationships in which they stand with one another (Giddens, 1984: 17; 1989: 19)
Policy style	a type of social structure, referring to the ways in which state institutions function in the process of economic development and to the relationships between state and business (cf. Richardson et al, 1982: 12-4; Whitley, 1992a: 119-65; Kenis, 1992; Waarden, 1992)
Business recipe	a type of social structure, referring to the ways in which firms function as economic actors, and to the relationships both between firms in the nation state and between owners, managers and workers within the organisations (Whitley, 1992a, e)
Technology paradigm	a type of social structure, referring to the ways in which industrial operators behave in the industry and to the dominant exchange relationships (cf. Dosi, 1982, 1984; Jones and Womack, 1986)
Industry system	The patterning of the three social structures - policy style, business recipe and technology paradigm - which constitutes firms' attendant social environment

Corporate Identities

Firms' structural links within their attendant industry system that not only provide them with access to a plurality of social resources empowering their actions but also connect them to a plurality of social rules governing or constraining their actions.

BIBLIOGRAPHIES

I. General

- Aldag, R.J., and Stearns, T.M. (1988) 'Issues in Research Methodology', *Journal of Management*, 14(2): 253-276.
- Aldrich, H. (1988) 'Paradigm Warriors: Donaldson v. The Critics of Organization Theory', *Organisation Studies*, 9: 19-25.
- Alic, J., and Miller, R. (1989) 'Export Strategies in the Computer Industry: Japan and the U.S.A.', *Technology Analysis and Strategic Management*, 1(1): 11-27.
- Allison, G.T. (1971) *Essence of Decision*. Boston: Little, Brown.
- Amihud, Y., and Lev, B. (1981) 'Risk Reduction as a Managerial Motive for Conglomerate Mergers', *Bell Journal of Economics*, 12: 605-617.
- Amsden, A. (1985) 'The State and Taiwan's Economic Development', in Evans, P. B., Rueschemeyer, D., and Skocpol, T. (eds) *Bringing the State Back in*. Cambridge: Cambridge University Press.
- Anchordoguy, M.C. (1989) *Computer Inc: Japan's Challenge to IBM*. Cambridge, MA: Harvard University Press.
- Ansoff, H.I. (1965) *Corporate Strategy*. Harmondsworth: Penguin.
- Ansoff, H.I. (1987) 'The Emerging Paradigm of Strategic Behaviour', *Strategic Management Journal*, 8: 501-515.
- Archer, S. (1988) 'Qualitative Research and the Epistemological Problems of the Management Disciplines', in Pettigrew, A.M. (ed) *Competition and the Management Process*. Oxford: Blackwell.
- Armstrong, P. (1987) 'Engineers, Management and Trust', *Work, Employment and Society*, 1(4): 421-440.
- Arnold, W. (1989) 'Bureaucratic Politics, State Capacity, and Taiwan's Automobile Industrial Policy', *Modern China*, 15(2): 178-214.
- Arthur, W.B. (1989) 'Competing Technologies, Increasing Returns, and Lock-In by Historical Events', *The Economic Journal*, 99:116-131.
- Ashmos, D.P., and Huber, G.P. (1987) 'The Systems Paradigm in Organizational Theory: Correcting the Record and Suggesting the Future', *Academy of Management Review*, 12(4): 607-621.

- Atkinson, M.M., and Coleman, W.D. (1985) 'Corporatism and Industrial Policy', in Cawson, A. (ed) *Organized Interests and the State: Studies in Meso-corporatism*. London: Sage.
- Bacharach, S.B. (1989) 'Organization Theories: Some Criteria for Evaluation', *Academy of Management Review*, 14(4): 496-515.
- Bain, J.S. (1968) *Industrial Organization* (2nd ed). New York: John Wiley and Sons.
- Balassa, B. (1981) *The Newly Industrializing Countries in the World Economy*. New York: Perpamon Press.
- Bank of Taiwan, (1991) *A Survey Report of Financial Condition in the Industry of Taiwan, R.O.C.*. Taipei.
- Barley, S.R. (1986) 'Technology as an Occasion for Structuring: Evidence from Observations of CT Scanners and the Social Order of Radiology Departments', *Administrative Science Quarterly*, 31: 78-108.
- Barrett, R.E., and Chin, S. (1987) 'Export-oriented Industrializing States in the Capitalist World System: Similarities and Differences', in Deyo, F.C. (ed) *The Political Economy of the New Asian Industrialism*. Cornell University Press.
- Baum, J. (1993) 'Taiwan: Mainlanders Adrift', *Far Eastern Economic Review*, 156(6), 11 Feb.: 17.
- Bauman, Z. (1990) *Thinking Sociologically*. Oxford: Blackwell.
- Bell, D.E., Raiffa, H., and Tversky, A. (eds) (1988) *Decision-making: Descriptive Normative and Prescriptive Interactions*. Cambridge: Cambridge University Press.
- Bello, W., and Rosenfeld, S. (1990) *Dragons in Distress: Asia's Miracle Economies in Crisis*. London: Penguin.
- Berger, P.L., and Luckmann, T. (1967) *The Social Construction of Reality*. New York: Doubleday.
- Best, M.H. (1990) *The New Competition: Institutions of Industrial Restructuring*. Cambridge: Polity Press.
- Boddewyn, J.J., and Brewer, T.L. (1994) 'International-Business Political Behaviour: New Theoretical Directions', *Academy of Management Review*, 19(1): 119-143.

- Bouchikhi, H. (1993) 'A Constructivist Framework for Understanding Entrepreneurship Performance', *Organisation Studies*, 14(4): 549-570.
- Boyacigiller, N.A., and Adler, N.J. (1991) 'The Parochial Dinosaur: Organisational Science in a Global Context', *Academy of Management Review*, 16(2): 262-290.
- Bracker, J. (1980) 'The Historical Development of the Strategic Management Concept', *Academy of Management Review*, 5(2): 219-224.
- Brint, S., and Karabel, J. (1991) 'Institutional Origins and Transformations: the Case of American Community Colleges', in Powell, W.W., and DiMaggio, P.J. (eds) *The New Institutionalism in Organizational Analysis*. Chicago: The University of Chicago Press.
- Brunsson, N. (1990) 'Deciding for Responsibility and Legitimation: Alternative Interpretations of Organisational Decision-making', *Accounting, Organisation and Society*, 15(1/2): 47-59.
- Bryant, C.G.A., and Jary, D. (eds) (1991) *Giddens' Theory of Structuration: A Critical Appreciation*. London: Routledge.
- Bryman, A. (ed) (1988) *Doing Research in Organizations*. London: Routledge.
- Bryman, A. (1993) 'The Nature of Organisation Structure: Constrain and Choice', in Morgan, D., and Stanley, L. (eds) *Debates in Sociology*. Manchester, England: Manchester University Press.
- Buchanan, D., Boddy, D., and McCalman, J. (1988) 'Getting In, Getting On, Getting Out, and Getting Back', in Bryman, A. (ed) *Doing Research in Organizations*. London: Routledge.
- Burrell, G., and Morgan, G. (1979) *Sociological Paradigm and Organizational Analysis*. London: Heinemann.
- Burton, S. (1993) 'Backlash Against Money', *Time*, August 23: 36-8.
- Camerer, C. F. (1985) 'Redirecting Research in Business Policy and Strategy', *Strategic Management Journal*, 6: 1-15.
- Camerer, C. F. (1991) 'Does Strategy Research Need Game Theory?', *Strategy Management Journal*, 12: 137-152.
- Capon, N., Farley, J.U., and Hoenig, S. (1990) 'Determinants of Financial Performance: a Meta-Analysis', *Management Science*, 36(10): 1143-1159.
- Carroll, G.R. (1993) 'A Sociological View on Why Firms Differ' *Strategic Management Journal*, 14: 237-249.

- Carroll, G.R., Goodstein, J., and Gyenes, A. (1990) 'Managing the institutional Environment: Evidence from Hungarian Agricultural Cooperatives', *European Sociological Review*, 6(1): 73-85.
- Carroll, P. (1993) *Big Blues: The Unmaking of IBM*. London: Weidenfeld & Nicolson.
- Cawson, A. (ed) (1985) *Organized Interests and the State: Studies in Meso-corporatism*. London: Sage.
- Cawson, A. (1986) *Corporatism and Political Theory*. Oxford: Blackwell.
- Cawson, A., Morgan, K., Webber, D., Holmes, P., and Stevens, A. (1990) *Hostile Brothers, Competition and Closure in the European Electronics Industry*. Oxford: Clarendon Press.
- CEPD (Council for Economic Planning and Development) (1991) (1993) *Taiwan Statistical Data Book*. Taipei.
- Chaffee, E.E. (1985) 'Three Models of Strategy', *Academy of Management Review*, 10(1): 89-98.
- Chalmers, A.F. (1982) *What is This Thing Called Science?* (2nd edition) Buckingham, England: Open University Press.
- Champagne, D. (1992) 'Transocietal Cultural Exchange within the World Economic and Political Systems', in Colomy, P. (ed) *The Dynamics of Social Systems*. London: Sage.
- Chan, S., and Clark, C. (1992) *Flexibility, Foresight, and Fortuna in Taiwan's Development: Navigating between Scylla and Charybdis*. London: Routledge.
- Chan, S., Clark, C., and Davis, D.R. (1990) 'State Entrepreneurship, Foreign Investment, Export Expansion and Economic Growth: Granger Causality in Taiwan's Development', *Journal of Conflict Resolution*, 34: 102-129.
- Chandler, A.D. (1962) *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*. Cambridge, MA: MIT Press.
- Chandler, A.D. (1977) *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, MA: Bellknap Press.
- Chandler, A.D. (1990) *Scale and Scope: Dynamics of Industrial Capitalism*. Cambridge, MA: Harvard University Press.

- Chang, D.W.(1989) 'Political Development in Taiwan: the Sun Yat-sen Model for National Reconstruction', *Issues and Studies*, 25(5): 11-32.
- Cheng, T., and Haggard, S. (eds) (1992) *Political Change in Taiwan*. Boulder, Colorado: Lynne Rienner.
- Cheng, T. and Haggard, S. (1992) 'Regime Transformation in Taiwan: Theoretical and Comparative Perspectives', in Cheng, T., and Haggard, S. (eds) *Political Change in Taiwan*. Boulder, Colorado: Lynne Rienner.
- Child, J. (1972) 'Organizational Structure, Environment and Performance: the Role of Strategic Choice', *Sociology*, 6: 1-22.
- Child, J. (1988) 'On Organizations in their Sectors', *Organizational Studies*, 9: 13-19.
- Chiu, P.C. (1992) 'Money and Financial Markets: The Domestic Perspective', in Ranis, G. (ed) *Taiwan: From Developing to Mature Economy*. Oxford: Westview Press.
- Chou, Y., and Nathan, A.J. (1987) 'Democratizing Transition in Taiwan', *Asian Survey*, 27(3): 277-299.
- Chou, Y.-J. (1991) 'The Role of State in Revising Taiwan's Neo-mercantile Trade Policy', *The Chinese Journal of Public Policy Studies*, May, 13: 31-57.
- Chposky, J. and Leonsis, T. (1989) *Blue Magic: the People, Power and Politics behind the IBM Personal Computer*. London: Crafton.
- Chrisman, J.J., Hofer, C.W., and Boulton, W.R. (1988) 'Toward a System for Classifying Business Strategies', *Academy of Management Review*, 13(3): 413-428
- Chu, Y. (1987) *Authoritarian Regimes under Stress: the Political Economy of Adjustment in the East Asian NICs*, Unpublished Doctoral Dissertation, University of Minnesota.
- Chu, Y. (1989) 'State Structures and Economic Adjustment in East Asia Newly Industrializing Countries', *International Organization*, 43(4): 647-72.
- Chu, Y. (1992) *Crafting Democracy in Taiwan*. Taipei: The Research Institute of National Policy.
- Clark, C. (1987) 'The Taiwan Exception: Implication for Contending Political Economy Paradigms', *International Studies Quarterly*, 31: 327-356.
- Clark, C. (1993) 'Taiwan in Post-Cold War Asia Pacific', in Hsiung, James C. (ed) *Asia Pacific in the New World Politics*. London: Lynne Rienner.

- Clark, S. (1991) 'The State Debate', in Clark, S. (ed) *The State Debate*. London: Macmillan.
- Clegg, S., and Redding, G. (eds) (1990) *Capitalism in Contrasting Cultures*. Berlin: de Gruyter.
- Clutterbuck, D., and Crainer, S. (1990) *Makers of Management*. London: Macmillan.
- Coase, R. (1937) 'The Nature of the Firm', *Economica*, 4: 386-405. repr. in Williamson, O.E. and Winter, S.E. (eds) (1991) *The Nature of the Firm*. Oxford: Oxford University Press.
- Cohen, M. (1988) *Taiwan at the Crossroads: Human Rights, Political Development, and Social Change on the Beautiful Island*. Washington, D.C.: Asia Resource Center.
- Cohen, I.J. (1989) *Structuration Theory: Anthony Giddens and Constitution of Social Life*. London: Macmillan.
- Colomy, P. (ed) (1992) *The Dynamics of Social Systems*. London: Sage.
- Coombs, R., Saviotti, P., and Walsh, V. (1987) *Economics and Technological Change*. London: Macmillan.
- Coombs, R., Saviotti, P., and Walsh, V. (1992) 'Technology and the Firm: the Convergence of Economic and Sociological Approaches?', in Coombs, R., Saviotti, P., and Walsh, V. (eds) *Economic Change and Company Strategies*. London: Academic Press.
- Coombs, R., Saviotti, P., and Walsh, V. (eds) (1992) *Economic Change and Company Strategies*. London: Academic Press.
- Craib, I. (1992) *Anthony Giddens*. London: Routledge.
- Crow, G. (1989) 'The Use of the Concept of "Strategy" in Recent Sociological Literature', *Sociology*, 23(1): 1-24.
- Cumings, B. (1987) 'The Origins and Development of the Northeast Asian Political Economy: Industrial Sectors, Product Cycles, and Political Consequences', in Deyo, F.C. (ed) *The Political Economy of the New Asian Industrialism*. Cornell University Press.
- Cyert, R.M., and March, J.G. (1963) *A Behaviour Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.

- d'Amboise, G., and Muldowney, M. (1988) 'Management Theory for Small Business: Attempts and Requirement', *Academy of Management Review*, 13(2): 226-240.
- Dane, F.C. (1990) *Research Methods*. Belmont, CA: Wadsworth.
- Dankbar, B. (1990) 'International Competition and National Institutions: the Case of the Automobile Industry', in Freeman, C., and Soete, L. (eds) *New Explorations in the Economics of Technical Change*. London: Pinter Publishers.
- Day, D.L., Farley, J.U., and Wind, J. (1990) 'New Perspectives on Strategy Research: a View from the Management Science', *Management Science*, 36(10).
- DeLamarter, R.T. (1986) *Big Blue: IBM's Use and Abuse of Power*. London: Macmillan.
- Deyo, F.C. (1987) 'Coalitions, Institutions, and Linkage Sequencing - Toward a Strategic Capacity Model of East Asian Development', in Deyo, F.C. (ed) *The Political Economy of the New Asian Industrialism*. Cornell University Press.
- Deyo, F.C. (ed) (1987) *The Political Economy of the New Asian Industrialism*. Cornell University Press.
- Diederer, P.J.M., Kemp, R.P.M., Muysken, J., and de Wit, G.R. (1990) 'Diffusion of Information Technology in Banking: the Netherlands as an Illustrative Case', in Freeman, C., and Soete, L. (eds) *New Explorations in the Economics of Technical Change*. London: Pinter Publishers.
- DiMaggio, P. and Powell, W.W. (1983) 'The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields', *American Sociological Review*, 48: 147-180. repr. in Powell, W.W., and DiMaggio, P.J. (eds) (1981) *The New Institutionalism in Organizational Analysis*. Chicago: The University of Chicago Press.
- Dixit, A.K. and Nabeluff, B.J. (1991) *Thinking Strategically: the Competitive Edge in Business, Politics and Everyday Life*. New York: W.W. Norton.
- Dodgson, M. (ed) (1989) *Technology Strategy and the Firm: Management and Policy*. Wessex, England: Longman.
- Donaldson, L. (1985) *In Defense of Organization Theory: A Reply to My Critics*. Cambridge: Cambridge University Press.
- Donaldson, L. (1988) 'In successful Defence of Organisation Theory: a Routing of the Critics', *Organisation Studies*, 9: 28-32.

- Dorfman, N.S. (1987) *Innovation and Market Structure: Lessons from the Computer and Semiconductor Industries*. Cambridge, MA: Ballinger.
- Dosi, G. (1981) *Technical Change and Survival: Europe's Semiconductor Industry*. Sussex European Paper (No.9), University of Sussex.
- Dosi, G. (1982) 'Technological Paradigms and Technological Trajectories: A suggested Interpretation of the Determinants and Directions of Technical Change', *Research Policy*, 11(3): 147-62.
- Dosi, G. (1984) *Technical Change and Industrial Transformation*. London: Macmillan.
- Dosi, G. (1988a) 'Sources, Procedures, and Microeconomic Effects of Innovation', *Journal of Economic Literature*, xxxvi (September): 1120-71.
- Dosi, G. (1988b) 'The Nature of the Innovative Process', in Dosi, G., Freeman, C., Nelson, R., Silverberg, G., and Soete, L. (eds) *Technical Change and Economic Theory*. London: Pinter Publishers.
- Dosi, G., Freeman, C., Nelson, R., Silverberg, G., and Soete, L. (eds) (1988) *Technical Change and Economic Theory*. London: Pinter Publishers.
- Dosi, G., Pavitt, K., and Soete, L. (1990) *The Economics of Technical Change and International Trade*. London: Harvester Wheatsheaf.
- Dosi, G., Giannetti, R., and Toninelli, P.A. (eds) (1992) *Technology and Enterprise in a Historical Perspective*. Oxford, England: Clarendon Press.
- Dosi, G., Teece, D.J., and Winter, S. (1992) 'Towards a Theory of Corporate Coherence: Preliminary Remarks', in Dosi, G., Giannetti, R., and Toninelli, P.A. (eds) *Technology and Enterprise in a Historical Perspective*. Oxford, England: Clarendon Press.
- Doty, D.H., and Glick, W.H. (1994) 'Typologies as a Unique Form of Theory Building: Toward Improved Understanding and Modeling', *Academy of Management Review*, 19(2): 230-251.
- Dror, I. (1993) 'The Process of Technology Evolution: Multitechnology Innovations as the Driving Force', *Technological Forecasting and Social Change*, 44: 49-58.
- Drucker, P.F. (1946) *The Concept of the Corporation*. London: Heinemann.
- Dunleavy, P. and O'Leary (1987) *Theories of the State*. London: Macmillan.

- Dyer, W.G. Jr., and Wilkins, A.L. (1991) 'Better Stories, not Better Constructs, to Generate Better Theory: a Rejoinder to Eisenhardt', *Academy of Management Review*, 16(3): 613-619.
- Dyson, K. (1983) 'The Cultural, Ideological, and Structural Context', in Dyson, K. and Wilks, S. (eds) *Industrial Crisis: A Comparative Study of the State and Industry*. Oxford: Martin Robertson.
- Dyson, K. and Wilks, S. (eds) (1993) *Industrial Crisis: A Comparative Study of the State and Industry*. Oxford: Martin Robertson.
- Economic Research Department, the Central Bank of China (1993) *Financial Statistically Monthly* (November). Taipei.
- Einhorn, H.J. and Hogarth, R.M. (1988) 'Behavioural Decision Theory: Process of Judgement and Choice', in Bell, D.E., Raiffa, H., and Tversky, A. (eds) *Decision-making: Descriptive Normative and Prescriptive Interactions*. Cambridge: Cambridge University Press.
- Eisenhardt, K.M. (1989a) 'Agency Theory: An Assessment and Review', *Academy of Management Review*, 14(1): 57-74.
- Eisenhardt, K.M. (1989b) 'Building Theories from Case Study Research', *Academy of Management Review*, 14(4): 532-550.
- Eisenhardt, K.M. (1991) 'Better Stories and Better Constructs: the Case for Rigor and Comparative Logic', *Academy of Management Review*, 16(3): 620-627.
- Eisenhardt, K.M., and Bourgeois III, L.J. (1988) 'Politics of Strategic Decision Making in High Velocity Environments: Towards a Mid-range Theory', *Academy of Management Journal*, 31: 737-770.
- Espeland, W. and Hirsch, P. (1990) 'Ownership Changes, Accounting Practice and the Redefinition of Corporation', *Accounting Organisations and Society*, 15, 1/2, 77-96.
- Evans, P.B. (1987) 'Class, State, and Dependence in East Asia: Lessons for Latin Americanists', in Deyo, F.C. (ed) *The Political Economy of the New Asian Industrialism*. Cornell University Press.
- Evans, P. B., Rueschemeyer, D., and Skocpol, T. (eds) (1985) *Bringing the State Back in*. Cambridge: Cambridge University Press.
- Evans, P.B., Rueschemeyer, D., and Skocpol, T. (1985) On the Road toward a More Adequate Understanding of the State', in Evans, P.B., Rueschemeyer, D. and Skocpol, T. (eds) *Bringing the State Back in*. Cambridge: Cambridge University Press.

- Evered, R. (1983) 'So What is Strategy', *Long Range Planning*, 16(3): 57-72.
- Fahey, L. and Christensen, H.K. (1986) 'Evaluating the Research on Strategy Content', *Journal of Management*, 12(2): 167-183.
- Feinerman, J.V. (1994) 'Taiwan and GATT', in Silk, M.A. (ed) *Taiwan Trade and Investment Law*. Hong Kong: Oxford University Press.
- Ferguson, C.H., and Morris, C. R. (1993) *Computer Wars: the Fall of IBM and the Future of Global Technology*. New York: Times Book.
- Fields, G.S. (1992) 'Living Standards, Labor Markets and Human Resources in Taiwan', in Ranis, G. (ed) *Taiwan: From Developing to Mature Economy*. Oxford: Westview Press.
- Flamm, K. S. (1987a) *Creating the Computer: Government, Industry and the High Technology*. Washington, D.C.: Brookings Instn.
- Flamm, K. S. (1987b) *Targeting the Computer: Government Support and International Competition*. Washington, D.C.: Brookings Instn.
- Fligstein, N. (1990) *The Transformation of Corporate Control*. Cambridge, MA: Harvard University Press.
- Forester, T. (1987) *High-Tech Society*. Oxford: Blackwell.
- Fransman, M. (1990) *The Market and Beyond, Cooperation and Competition in Information Technology Development in the Japanese System*. Cambridge: Cambridge University Press.
- Freeman, C., and Soete, L. (eds) (1990) *New Explorations in the Economics of Technical Change*. London: Pinter Publishers.
- Freiberger, P., and Swaine, M. (1984) *Fire in the Valley: The Making of Personal Computer*. Berkeley, CA: Osborne/McGraw-Hill.
- Friedland, R., and Alford, R.R. (1991) 'Bringing Society Back In: Symbols, Practices, and Institutional Contradictions', in Powell, W.W., and DiMaggio, P.J. (eds) *The New Institutionalism in Organizational Analysis*. Chicago: The University of Chicago Press.
- Garud, R. and Kumaraswamy, A. (1993) 'Changing Competitive Dynamics in Network Industries: an Exploration of Sun Microsystems' Open Systems Strategies', *Strategic Management Journal*, 14: 351-369.
- Gedajlovic, E. (1993) 'Ownership, Strategy and Performance: Is the Dichotomy Sufficient?', *Organization Studies*, 14(5): 731-52.

- Giddens, A. (1977) *Studies in Social and Political Theory*. London: Hutchinson.
- Giddens, A. (1979) *Central Problems in Social Theory*. London: Macmillan.
- Giddens, A. (1981) *A Contemporary Critique of Historical Materialism: Vol. 1: Power, Property, and the State*. London: Macmillan.
- Giddens, A. (1984) *The Constitution of Society*. Cambridge: Polity Press.
- Giddens, A. (1985) *The Nation-State and Violence*. Cambridge: Polity Press.
- Giddens, A. (1989a) 'A Reply to My Critics', in Held, D., and Thompson, J.B. (eds) *Social Theory of Modern Societies: Anthony Giddens and His Critics*. Cambridge: Cambridge University Press.
- Giddens, A. (1989b) *Sociology*. Cambridge: Polity Press.
- Gilbert, X., and Strebel, P. (1991) 'Developing Competitive Advantage', in Mintzberg, H., and Quinn, J.B. (eds) *The Strategy Process: Concepts, Contexts, Cases*. (2nd edition) Englewood Cliffs, NJ: Prentice-Hall.
- Ginsberg, A. (1984) 'Operationalizing Organizational Strategy: Toward an Integrative Framework', *Academy of Management Review*, 9(3): 548-557.
- Ginsberg, A., and Venkatraman, N. (1985) 'Contingency Perspectives of Organizational Strategy: A Critical Review of the Empirical Research', *Academy of Management Review*, 10(3): 421-434.
- Gioia, D.A., and Pitre, E. (1990) 'Multiparadigm Perspectives on Theory Building', *Academy of Management Review*, 15(4): 584-602.
- Glaser, B.G. (1978) *Theoretical Sensitivity*. Mill Valley, CA: Sociology Press.
- Glaser, B.G., and Strauss, A.L. (1967) *The Discovery of Grounded Theory - Strategies for Qualitative Research*. London: Weidenfeld and Nicholson.
- Gold, T.B. (1986) *State and Society in the Taiwan Miracle*. New York: M.E. Sharpe.
- Gold, T.B. (1988) 'Entrepreneurs, Multinationals and the State', in Winckler, E.A., and Greenhalgh, S. (eds) *Contending Approaches to the Political Economy of Taiwan*. New York: M.E. Sharpe.
- Goodstein, J.D. (1994) 'Institutional Pressures and Strategic Responsiveness: Employer Involvement in Work-family Issues', *Academy of Management Journal*, 37(2): 350-382.

- Granovetter, M. (1985) 'Economic Action, Social Structure and Embeddedness', *American Journal of Sociology*, 91: 481-510.
- Granovetter, M. (1992) 'Economic Institutions as Social Construction: A Framework for Analysis', *Acta Sociologica*, 35: 3-11
- Grant, J.H. (1988) 'Strategy in Research and Practice', in Grant, J.H. (ed) *Strategic Management Frontiers*. Greenwich, Connecticut: JAI Press.
- Grant, J.H. (ed) (1988) *Strategic Management Frontiers*. Greenwich, Connecticut: JAI Press.
- Grant, R.M. (1991) 'The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation', *California Management Review*, 33(3): 114-122.
- Grant, W. (1985) 'Introduction', in Grant, W. (ed) *The Political Economy of Corporatism*. London: Macmillan.
- Greenhalgh, S. (1988) 'Families and Networks in Taiwan's Economic Development', in Winckler, E.A., and Greenhalgh, S. (eds) *Contending Approaches to the Political Economy of Taiwan*. New York: M.E. Sharpe.
- Greenwood, J.D. (1991) *Relations and Representations*. London: Routledge.
- Gregson, N. (1989) 'On the (ir)relevance of Structuration Theory to Empirical Research', in Held, D., and Thompson, J.B. (eds) *Social Theory of Modern Societies: Anthony Giddens and His Critics*. Cambridge: Cambridge University Press.
- Grove, A.S. (1990) 'The Future of the Computer Industry', *California Management Review*, 33(1): 148-160.
- Habermas, J. (1973) *Legitimation Crisis*. London: Heinemann.
- Hagedoorn, J. and Schakenraad, J. (1990) 'Inter-firm Partnerships and Co-operative Strategies in Core Technologies', in Freeman, C., and Soete, L. (eds) *New Explorations in the Economics of Technical Change*. London: Pinter Publishers.
- Haggard, S.M. (1988) 'The Politics of Industrialization in the Republic of Korea and Taiwan', in Hughes, H. (ed) *Achieving Industrialization in East Asia*. Cambridge: Cambridge University Press.
- Haggard, S., and Cheng, T. (1987) 'State and Foreign Capital in the East Asian NICs', in Deyo, F.C. (ed) *The Political Economy of the New Asian Industrialism*. Cornell University Press.

- Halal, W.E. (1993) 'The Information Technology Revolution: Computer Hardware, Software, and Services into the 21st Century', *Technological Forecasting and Social Change*, 44: 69-86.
- Hambrick, D.C. (1984) 'Taxonomic Approaches to Studying Strategy: Some conceptual and methodological issues', *Journal of Management*, 10(1): 27-41.
- Hamilton, G., and Biggart, N.W. (1988) 'Market, Culture, and Authority: a Comparative Analysis of Management and Organisation in the Far East', *American Journal of Sociology* 94, Supplement: 552-594.
- Hamilton, G., and Kao, C.S. (1990) 'The Institutional Foundation of Chinese Business: the Family Firm in Taiwan', *Comparative Social Research*, 12: 95-112.
- Hamilton, G., Zeile, W., and Kim, W.J. (1990) 'The Network Structures of East Asian Economies', in Clegg, S., and Redding, G. (eds) *Capitalism in Contrasting Cultures*. Berlin: de Gruyter.
- Harrigan, K.R. (1980) *Strategies for Declining Business*. Lexington, MA: D.C. Heath Co..
- Harrigan, K.R. (1983) 'Research Methodologies for Contingency Approaches to Business Strategy', *Academy of Management Review*, 8(3): 398-405.
- Harrison, S.S. (1988) 'Taiwan after Chiang Ching-kuo', *Foreign Affairs*, 66: 790-808.
- Hassard, J. (1990) 'An Alternative to Paradigm Incommensurability in Organization Theory' in Hassard, J., and Pym, D. (eds) *The Theory and Philosophy of Organizations*. London: Routledge.
- Hassard, J., and Pym, D. (eds) (1990) *The Theory and Philosophy of Organizations*. London: Routledge.
- Hausler, J., Hohn, H., and Lutz, S. (1994) 'Contingencies of Innovative Networks: A Case Study of Successful Interfirm R&D Collaboration', *Research Policy*, 23: 47-66.
- Held, D., and Thompson, J.B. (eds) (1989) *Social Theory of Modern Societies: Anthony Giddens and His Critics*. Cambridge: Cambridge University Press.
- Hellgren, B., and Melin, L. (1992) 'Business Systems, Industrial Wisdom and Corporate Strategies', in Whitley, R.D. (ed) *European Business Systems: Firms and Markets in their National Context*. London: Sage.

- Hellgren, B., and Melin, L. (1993) 'The Role of Strategists' Ways-of-thinking in Strategic Change Processes', in Hendry, J., Johnson, G., and Newton, J. (eds) *Strategic Thinking: Leadership and the Management of Change*. Chichester, England: John Wiley & Sons.
- Hendry, J. (1989) *Innovating for Failure: Government Policy and the Early British Computer Industry*. London: MIT Press.
- Hendry, J., Johnson, G., and Newton, J. (eds) (1993) *Strategic Thinking: Leadership and the Management of Change*. Chichester, England: John Wiley & Sons.
- Hinings, B., and Greenwood, R. (1988) 'The Normative Prescription of Organizations', in Zucker, L.G. (ed) *Institutional Patterns and Organizations: Culture and Environment*. Cambridge, MA: Ballinger.
- Hobgood-Brown, K., and Clinton, O. (1994) 'Technology Transfer', in Silk, M.A. (ed) *Taiwan Trade and Investment Law*. Hong Kong: Oxford University Press.
- Hodgson, G. (1988) *Economics and Institutions*. Cambridge: Polity Press.
- Hofer, C.W. (1975) 'Toward a Contingency Theory of Business Strategy', *Academy of Management Journal*, 18: 784-810.
- Holton, R.J. (1992) *Economy and Society*. London: Routledge.
- Hoskin, K. (1990) 'Using History to Understand Theory: a Reconceptualisation of the Historical Genesis of Strategy', Paper presented to the European Institute Studies in Management Workshop, Venice, October.
- Hou, C., and Gee, S. (1993) 'National Systems Supporting Technical Advance in Industry: The Case of Taiwan', in Nelson, R.R. (ed) *National Innovation Systems: A Comparative Analysis*. New York: Oxford University Press.
- Hou Liang, C., and Skully, M.T. (1982) 'Financial Institutions and Markets in Taiwan', in Skully, M.T. (ed) *Financial Institutions and Markets in the Far East*. London: Macmillan.
- Hsiao, H. M. (1992) 'The Rise of Social Movements and Civil Protests', in Cheng, T., and Haggard, S. (eds) *Political Change in Taiwan*. Boulder, Colorado: Lynne Rienner.
- Hsieh, C.C. (1985) *Strategy for Survival: The Foreign Policy and External Relations of the Republic of China on Taiwan, 1949-1979*. London: Sherwood.

- Hu, J. C. (ed) (1994) *Quite Revolutions on Taiwan, Republic of China*. Taipei: Kwang Hwa Publishing Co..
- Huang, C. (1989) 'The State and Foreign Investment: the Case of Taiwan and Singapore', *Comparative Political Studies*, 22: 93-121.
- Huang, J. J.-T. (1994) 'Income Taxation', in Silk, M.A. (ed), *Taiwan Trade and Investment Law*. Hong Kong: Oxford University Press.
- Huff, A.S. (1990) 'Mapping Strategic Thought', in Huff, A.S. (ed) *Mapping Strategic Thought*. London: Wiley.
- Huff, A.S. (ed) (1990) *Mapping Strategic Thought*. London: Wiley.
- Huff, A.S., and Reger, R.K. (1987) 'A Review of Strategic Process Research', *Journal of Management*, 13(2): 211-236.
- Hughes, H. (ed) (1988) *Achieving Industrialization in East Asia*. Cambridge: Cambridge University Press.
- IDB (Industrial Development Bureau), MOEA (1992) *Development of Industrial in Taiwan, Republic of China*. Taipei.
- Jacobson, R. (1992) 'The "Austrian" School of Strategy', *Academy of Management Review*, 17(4): 782-807.
- Jary, D. (1991) "'Society as Time-Traveller": Giddens on Historical Change, Historical Materialism and the Nation-State in World Society', in Bryant, C.G.A., and Jary, D. (eds) *Giddens' Theory of Structuration: A Critical Appreciation*. London: Routledge.
- Jary, D., and Jary, J. (1991) *Dictionary of Sociology*. Glasgow, England: HarperCollins Publishers.
- Jemison, D.B. (1981) 'The Importance of an Integrative Approach to Strategic Management Research', *Academy of Management Review*, 6(4): 601-608.
- Jensen, M.C., and Meckling, W.H. (1976) 'Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure', *Journal of Financial Economics*, 3: 305-360.
- Jiang, P., and Wu, W. (1992) 'The Changing Role of the KMT in Taiwan's Political System', in Cheng, T., and Haggard, S. (eds) *Political Change in Taiwan*. Boulder, Colorado: Lynne Rienner.
- Jick, T.D. (1979) 'Mixing Qualitative and Quantitative Methods: Triangulation in Action', *Administrative Science Quarterly*, 24: 602-611.

- Johnson, C. (1982) *MITI and the Japanese Miracle: The Growth of Industrial Policy 1925-1975*. Stanford: Stanford University Press.
- Johnson, C. (1987) 'Political Institutions and Economic Performance: The Government-Business Relations in Japan, South Korea and Taiwan', in Deyo, F.C. (ed) *The Political Economy of the New Asian Industrialism*. Cornell University Press.
- Jones, D.T. (1989) 'Corporate Strategy and Technology in the World Automobile Industry', in Dodgson, M. (ed) *Technology Strategy and the Firm: Management and Policy*. Wessex, England: Longman.
- Jones, D.T., and Womack, J.P. (1986) 'The Evolution of the World Automobile Industry', in McGee, J., and Thomas, H. (1986) *Strategic Management Research: A European Perspective*. Chichester, England: John Wiley and Sons.
- Jowett, P., and Rothwell, M. (1986) *The Economics of Information Technology*. London: Macmillan.
- Juliussen, K., and Juliussen, E. (1989) *Computer Industry Almanac*. Computer Industry Almanac Inc..
- Kay, J. (1991) 'Economics and Business', *The Economic Journal*, 101: 57-63.
- Kay, J. (1993) *Foundations of Corporate Success*. Oxford: Oxford University Press.
- Kelly, T. (1987) *The British Computer Industry: Crisis and Development*. London: Croom Helm.
- Kenis, P. (1992) *The Social Construction of an Industry*. Colorado: Westview Press.
- Khazam, J., and Mowery, D. (1994) 'The Commercialization of RISC: Strategies for the Creation of Dominant Designs', *Research Policy*, 23: 89-102.
- Knights, D., and Morgan, G. (1990) 'The Concept of Strategy in Sociology: A Note of Dissent', *Sociology*, 24(3): 475-483.
- Knights D. and Morgan G. (1991) 'Corporate Strategy, Organisations and Subjectivity', *Organisation Studies*, 12(2): 251-273.
- Koo, H. (1987) 'The Interplay of State, Social Class, and World System in East Asian Development: the Cases of South Korea and Taiwan', in Deyo, F.C. (ed) *The Political Economy of the New Asian Industrialism*. Cornell University Press.
- Kuhn, T. (1970) *The Structure of Scientific Revolution* (2nd). Chicago: University of Chicago Press.

- Lai, I.-J (1994) 'Securities Regulation', in Silk M.A. (ed) *Taiwan Trade and Investment Law*. Hong Kong: Oxford University Press.
- Lam, D.K. (1989) 'Guerrilla Capitalism: Exported Oriented Firms and the Economic Miracle in Taiwan (1973-87)', *Journal of Sunnology* (Kaohsiung, Taiwan), 4(1): 167-183.
- Lane, C. (1992) 'European Business Systems: Britain and Germany Compared', in Whitley, R.D. (ed) *European Business Systems: Firms and Markets in their National Context*. London: Sage.
- Larsen J.K. and Rogers, E.M. (1984) *Silicon Valley Fever: Growth of High-Technology Culture*. London: Counterpoint.
- Lau, L.J. (1990) 'The Economy of Taiwan, 1981-1988: a Time of Passages', in Lau, L.J. (ed) *Models of Development - A Comparative Study of Economic Growth in South Korea and Taiwan*. San Francisco: ICS Press.
- Lau, L.J. (ed) (1990) *Models of Development - A Comparative Study of Economic Growth in South Korea and Taiwan*. San Francisco: ICS Press.
- Lau, L.J., and Klein, L.R. (ed) (1986) *Modes of Development: A Comparative Study of Economic Growth in South Korea and Taiwan*. San Francisco: ICS Press.
- Lawriwsky, M.L. (1984) *Corporate Structure and Performance*. London: Croom Helm.
- Leavy, B. (1991) 'A Process Study of Strategic Change and Industry Evolution - the Case of the Irish Dairy Industry', 1958-74, *British Journal of Management*, 2: 187-204.
- Lenz, R.T. (1980) 'Strategic Capability: A Concept and Framework for Analysis', *Academy of Management Review*, 5(2): 225-234.
- Leontiades, M. (1979) 'Strategy and Reality: A Challenge for Business Policy', *Academy of Management Review*, 4(2): 275-279.
- Leontiades, M. (1982) 'The Confusing Words of Business Policy', *Academy of Management Review*, 7(1): 45-48.
- Levy, B (1988) 'Korean and Taiwanese firms as International Competitors: The Challenges Ahead', *Columbia Journal of World Business* (Spring): 43-51.
- Li, W. (1986) 'Entrepreneurial Role and Societal Development in Taiwan', *Journal of Chinese Studies*, 3: 77-96.

- Liang, K.S., and Hou Liang, C. (1988) *The Financial System and Financial Policy*. (in Chinese) Taipei: CEPD.
- Lim, L.Y.C., and Fong, P.E. (eds) (1991) *Foreign Direct Investment and Industrialization in Malaysia, Singapore, Taiwan, and Thailand*. Paris: OECD.
- Liu, A.P.L. (1987) *Phoenix and the Lambe Lion Modernization in Taiwan and Mainland China 1950-1980*. Standard, CA: Hoover Institution Press.
- Liu, P. (1993) 'Is Manufacturing on the Ropes', *Free China Review*, Oct.: 52--7.
- Liu, P. K.C. (1992) 'Science, Technology and Human Capital Formation', in Ranis, G. (ed) *Taiwan: From Developing to Mature Economy*. Oxford: Westview Press.
- Lu, A. (1992) 'Political Opposition in Taiwan: The Development of the Democratic Progressive Party', in Cheng, T., and Haggard, S. (eds) *Political Change in Taiwan*. Boulder, Colorado: Lynne Rienner.
- MacCrimmon, K.R. (1993) 'Do Firm Strategies Exist?', *Strategic Management Journal*, 14: 113-130.
- Mahoney, J., and Pandian, R. (1992) 'The Resource-based View within the Conversation of Strategic Management', *Strategic Management Journal*, 13: 363-380.
- Manes, S., and Andrews, P. (1993) *The Legend of Micro Kid*. Doubleday Dell.
- Marin, B., and Mayntz, R. (1991) *Policy Networks: Empirical Evidence and Theoretical Considerations*. Boulder, Colorado: Westview Press.
- Marris, R. (1964) *The Economic Theory of Managerial Capitalism*. London: Macmillan.
- Marsh, D., and Rhodes, R.A.W. (eds) (1992) *Policy Networks in British Government*. Oxford: Oxford University Press.
- Martin, J. (1990) 'Breaking Up the Mono-Method Monopolies in Organizational Analysis', in Hassard, J., and Pym, D. (eds) *The Theory and Philosophy of Organizations*. London: Routledge.
- Mazey, S., and Richardson, I. (1992) 'Conclusion: A European Policy Style?', in Mazey, S., and Richardson, J. (eds) *Lobbying in the European Community*. Oxford: Oxford University Press.
- McClellan, S.T. (1984) *The Coming Computer Industry Shakeout*. New York: Wiley.

- McGee, J., and Thomas, H. (1986) 'Strategic Groups: Theory, Research and Taxonomy', *Strategic Management Journal*, 7: 141-160.
- McGuire, J.B. (1986) Management and Research Methodology', *Journal of Management*, 12(1): 5-17.
- McKenna, R. (1989) *Who's Afraid of Big Blue? How Companies are Challenging IBM - and Winning*, Reading, MA: Addison-Wesley.
- Meaney, C.S. (1992) 'Liberalization, Democratization, and the Role of the KMT', in Cheng, T., and Haggard, S. (eds) *Political Change in Taiwan*. Boulder, Colorado: Lynne Rienner.
- Medium and Small Business Administration, MOEA (1992) *A Flying Dragon: The Guidance and Growth of Small and Medium-Sized Business*. Taipei.
- Mercer, D. (1987) *IBM: How the World's Most Successful Corporation is Managed?* London: Kogan Page.
- Mercer, D. (ed) (1992) *Managing the External Environment: A Strategic Perspective*. London: Sage.
- Merton, R.K. (1968) *Social Theory and Social Structure*. New York: Free Press.
- Merton, R.K., and Kendall, P.L. (1946) 'The Focused Interview', *American Journal of Sociology*, 51: 541-557.
- Mintzberg, H. (1979) 'An Emerging Strategy of "Direct" Research', *Administrative Science Quarterly*, 24: 582-589.
- Mintzberg, H. (1984) 'Power and Organization Life Cycles', *Academy of Management Review*, 9: 207-224.
- Mintzberg, H. and Quinn, J.B. (eds) (1991) *The Strategy Process: Concepts, Contexts, Cases*. (2nd edition) Englewood Cliffs, NJ: Prentice-Hall.
- Mitroff, I and Mason, R.O. (1982) 'Business Policy and Metaphysics: Some Philosophical Considerations', *Academy of Management Review*, 7: 361-371.
- Modis, T. (1993) 'Technological Substitutions in the Computer Industry', *Technological Forecasting and Social Change*, 43: 157-167.
- MOEA (Ministry of Economic Affairs) (1992) *The Medium and Small-sized Business Yearbook*. (in Chinese) Taipei.

- Mohr, J., and Spekman (1993) 'Characteristics of Partnership Success: Partnership Attributes, Communication Behaviour, and Conflict Resolution Techniques', *Strategic Management Journal*, 15: 135-152,
- Montgomery, C.A., Wernerfelt, B., and Balakrishnan, S. (1989) 'Strategy Content and the Research Process: A Critique and Commentary', *Strategic Management Journal*, 10: 189-197.
- Moody, P. (1992) *Political Change on Taiwan: A Study of Ruling Party Adaptability*. New York: Praeger.
- Moon, C. (1990) 'The Future of the Newly Industrialising Countries: An Uncertain Promise?', in Pirages, D.C., and Sylvester, C. (1990) *Transformations in the Global Political Economy*. London: Macmillan.
- Morgan, D., and Stanley, L. (eds) (1993) *Debates in Sociology*. Manchester: Manchester University Press.
- Morgan, G. (1986) *Images of Organization*. London: Sage.
- Morgan, G. (1990) *Organization in Society*. London: Macmillan.
- Morgan, G., and Smircich, L. (1980) "The Case for Qualitative Research", *Academy of Management Review*, 5: 491-500.
- Moss, J. (1992) *Servicing and Supporting IBM PCs and Compatibles*. Wilmslow, England: Sigma Press.
- Myers, R.H. (1986) 'The Economic Development of the Republic of China on Taiwan', In Lau, L.J., and Klein, L.R. (ed) *Modes of Development: A Comparative Study of Economic Growth in South Korea and Taiwan*. San Francisco: ICS Press.
- Nelson, R. (1991) 'Why do Firms Differ, and How does It Matter?', *Strategic Management Journal*, 12 (winter): 61-74.
- Nelson, R. (1992) 'The Role of Firms in Technical Advance: a Perspective from Evolution Theory', in Dosi, G., Giannetti, R., and Toninelli, P.A. (eds) *Technology and Enterprise in a Historical Perspective*. Oxford, England: Clarendon Press.
- Nelson, R. (ed) (1993) *National Innovation Systems: A Comparative Analysis*. New York: Oxford University Press.
- Nelson, R. and Winter, S. (1977) 'In Search of Useful Theory of Innovation', *Research Policy*, 6: 36-76.

- Nelson, R. and Winter, S. (1982) *An Evolution Theory of Economic Change*. Cambridge, MA: Harvard University Press.
- Nichols, T. (1969) *Ownership, Control and Ideology*. London: Allen and Unwin.
- NSC (National Science Council) (1988-1993) *Indicators of Science and Technology, Republic of China*. Taipei.
- NSC (National Science Council) (1993) *Statute for the Establishment and Administration of A Science-based Industrial Park*. Hsin-chu, Taiwan.
- Numazaki, I. (1986) 'Networks of Taiwanese Big Business', *Modern China*, 12: 487-534.
- Oliver, C. (1991) 'Strategic Responses to Institutional Processes', *Academy of Management Review*, 16(1): 145-179.
- Orrù, M., Biggart, N.W., and Hamilton, G.G. (1991) 'Organizational Isomorphism in East Asia', in Powell, W.W., and DiMaggio, P.J. (eds) *The New Institutionalism in Organizational Analysis*. Chicago: The University of Chicago Press.
- Osigweh, C.A.B. (1989) 'Concept Fallibility in Organizational Science', *Academy of Management Review*, 14(4): 579-594.
- Oster, S. (1990) *Modern Competitive Analysis*. Oxford: Oxford University Press.
- Pack, H. (1992) 'New Perspectives on Industrial Growth in Taiwan', in Ranis, G. (ed) *Taiwan: From Developing to Mature Economy*. Oxford: Westview Press.
- Pack, H. and Westphal, L.E. (1986) 'Industrial Strategy and Technological Change: Theory vs Reality', *Journal of Development Economics*, 22: 87-128.
- Pang, C. (1990) 'The State and Socioeconomic Development in Taiwan Since 1949', *Issues and Studies*, 26(5): 11-36.
- Panitch, L. (1980) 'Recent Theorizations of Corporatism: Reflections on a Growth Industry', *British Journal of Sociology*, 31: 161-187.
- Parsons, T. (1960) *Structure and Process in Modern Societies*. New York: Free Press.
- Pascale, R. (1991) *Managing on the Edge*. New York: Simon and Schuster.
- Pennells, L. (1994) 'The Making of an Image', *Free China Review*, March: 42-5.

- Pennings, J.M. (1985) 'Toward Convergence in Strategic Theory and Practice', in Pennings, J.M. (ed) *Organizational Strategy and Change*. San Francisco: Jessey-Bass.
- Penrose, E.T. (1980) *The Theory of the Growth of the Firm*. (2nd edition) Oxford: Blackwell.
- Perrow, C. (1986) 'Economic Theories of Organisation', *Theory and Society*, 15: 11-45.
- Peters, T. (1994) 'Turbulence Rules', *Independent* (Newspaper), 17 July: 18.
- Pettigrew, A.M. (1985) *The Awakening Giant*. Oxford: Blackwell.
- Pettigrew, A.M. (ed) (1988a) *Competition and the Management Process*. Oxford: Blackwell.
- Pettigrew, A.M. (ed) (1988b) *The Management of Strategic Change*. Oxford: Blackwell.
- Pettigrew, A.M. (1990) 'Longitudinal Field Research on Change: Theory and Practice', *Management Science*, 1(3): 267-292.
- Pettigrew, A.M. (1992) 'Guest Editor's Introduction', *Strategic Management Journal*, 13, Winter (special issue): 1-13.
- Pinder, C.C., and Moore, L.F. (eds) (1980) *Middle Range Theory and the Study of Organizations*. Boston: Martinus Nijhoff.
- Podsakoff, P.M., and Dalton, D.R. (1987) 'Research Methodology in Organizational Studies', *Journal of Management*, 13(2): 419-441.
- Pollar, S. (1992) 'The Concept of the Industrial Revolution', in Dosi, G., Giannetti, R., and Toninelli, P.A. (eds) *Technology and Enterprise in a Historical Perspective*. Oxford, England: Clarendon Press.
- Poole, M.S., and Van De Ven, A.H. (1989) 'Using Paradox to Build Management and Organization Theories', *Academy of Management Review*, 14(4): 562-578.
- Popper, K.R. (1959) *The Logic of Scientific Discovery*. London: Hutchinson.
- Porter, M.E. (1980) *Competitive Strategy: Techniques for Analysing Industries and Firms*. New York: Free Press.
- Porter, M.E. (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.
- Porter, M.E. (1990) *Competitive Advantage of Nations*. London: Macmillan.

- Powell, W.W. (1987) 'Hybrid Organisational Arrangements: New Form or Transitional Development', *California Management Review*, 30(1): 67-87.
- Powell, W.W. (1991) 'Expanding the Scope of Institutional Analysis', in Powell, W.W., and DiMaggio, P.J. (eds) *The New Institutionalism in Organizational Analysis*. Chicago: The University of Chicago Press.
- Powell, W.W., and DiMaggio (eds) (1991) *The New Institutionalism in Organizational Analysis*. Chicago: The University of Chicago Press.
- Pye, L.W. (1988) 'The New Asian Capitalism: A political Portrait' in Berger, P.L., and Hsiao, H.-H.M. (eds) *In Search of an East Asian Development Model*. New Brunswick: Transaction Books.
- Quinn, J.B. (1985) 'Case Study: Intel Corporation', in Mintzberg, H. and Quinn, J.B. (eds) (1991) *The Strategy Process: Concepts, Contexts, Cases*. (2nd edition) Englewood Cliffs, NJ: Prentice-Hall.
- Raab, C.D. (1992) 'Taking Networks Seriously: Education Policy in Britain', *European Journal of Political Research*, 21(1-2): 69-90.
- Ragin, C.C. (1987) *The Comparative Method*. Berkeley, CA: University of California Press.
- Ragin, C.C. (1992) 'Introduction: Cases of "What is a Case"', in Ragin, C.C. and Becker, H.S. (eds) *What is A Case?* Cambridge: Cambridge University Press.
- Ragin, C.C., and Becker, H.S. (eds) (1992) *What is A Case?* Cambridge: Cambridge University Press.
- Ranis, G. (ed) (1992) *Taiwan: From Developing to Mature Economy*. Oxford: Westview Press.
- Räsänen, K., and Whipp, R. (1992) 'National Business Recipes: A Sector Perspective', in Whitley, R. (ed) *European Business Systems: Firms and Markets in their National Context*. London: Sage.
- Ranson, S., Hinings, B., and Greenwood, R. (1980) 'The Structuring of Organizational Structures', *Administrative Science Quarterly*, 25: 1-17.
- Reed, M. (1989) *The Sociology of Management*. Brighton: Harvest.
- Reed, M. and Hughes, M. (eds) (1992) *Rethinking Organization, New Directions in Organization Theory and Analysis*. London: Sage.
- Republic of China Yearbook, 1991-92* (1992) Taipei: Kwang Hwa Publishing Co.

- Richardson, J. (ed) (1982) *Policy Style In Western Europe*. London: Allen & Unwin.
- Richardson, J., Gastafesson G., and Jordan G. (1982) 'The Concept of Policy Style', In Richardson, J. (ed) *Policy Style In Western Europe*. London: Allen & Unwin.
- Rickards, G.P. (1994) 'Patent Registration and Protection', in Silk, M.A. (ed) *Taiwan Trade and Investment Law*. Hong Kong: Oxford University Press.
- Riley, P. (1983) 'A Structurationist Account of Political Culture', *Administrative Science Quarterly*, 28: 314-337.
- Robinson, I. (1991) 'The Computer Industry Matures', *Australian Accountant*, 61(1): 58-59.
- Rock, P. (1979) *The Making of Symbolic Interactionism*. London: Macmillan.
- Romme, G. (1990) 'The Formation of Firm Strategy as Self-organisation', in Soete, L. and Freeman, C. (eds). *New Explorations in the Economics of Technical Change*. London: Pinter Publishers.
- Rueschemeyer, D., and Evans, P.B. (1985) 'The State and Economic Transformation: Towards an Analysis of the Conditions Underlying Effective Intervention', in Evans, P.B., Rueschemeyer, D. and Skocpol, T. (eds) *Bringing the State Back in*. Cambridge: Cambridge University Press.
- Rumelt, R.P., Schendel, D., and Teece, D.J. (1991) 'Strategic Management and Economics', *Strategic Management Journal*, 12: 5-29.
- Sahal, D. (1985) 'Technological Guide-posts and Innovation Avenues', *Research Policy*, 14(2): 61-82.
- Samuelson, P.A., and Nordhaus, W.D. (1992) *Economics*. (14th edition) New York: McGraw-Hill.
- Saunders, C.B., and Thompson, J.C. (1980) 'A Survey of the Current State of Business Policy Research', *Strategic Management Journal*, 1: 119-130.
- Saviotti, P.P., and Metcalfe, J.S. (eds) (1991) *Evolutionary Theories of Economic and Technological Change*. Chur, Switzerland: Harwood Academic Publishers.
- Sayer, A. (1992) *Method in Social Science*. (2nd edition) London: Routledge.
- Schendel, D.E., and Cool, K. (1988) 'Development of the Strategic Management Field', in Grant, J.H. (ed) *Strategic Management Frontiers*. Greenwich, Connecticut: JAI Press.

- Schmitter, P.C. (1979) 'Still the Century of Corporatism?', in Schmitter, P.C., and Lehmbruch, G. (eds) *Trends Toward Corporatist Intermediation*. London: Sage.
- Schmitter, P.C., and Lehmbruch, G. (eds) (1979) *Trends Toward Corporatist Intermediation*. London: Sage.
- Schubert, K., and Jordan, G. (1992) 'Introduction - Special Issue: Policy Networks', *European Journal of Political Research*, 21(1-2): 1-6.
- Schumpeter, J.A. (1934) *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
- Scott, W.R. (1987a) *Organisation: Rational, Natural and Open Systems*. Englewood Cliffs, NJ: Prentice-Hall.
- Scott, W.R. (1987b) 'The Adolescence of Institutional Theory', *Administrative Science Quarterly*, 32: 493-511.
- Scott, W.R. (1991) 'Unpacking Institutional Arguments', in Powell, W.W., and DiMaggio, P.J. (eds) *The New Institutionalism in Organizational Analysis*. Chicago: The University of Chicago Press.
- Sculley, J. (1987) *Odyssey, Pepsi to Apple*. New York: Harper and Row.
- Shaw, M. (1990) 'Strategy and Social Process; Military Context and Sociological Analysis', *Sociology*, 24: 65-74.
- Shearman, C., and Burrell, G. (1987) 'The Structures of Industrial Development', *Journal of Management Studies*, 24(4): 325-345.
- Shrivastava, P. (1986) 'Is Strategic Management Ideological?', *Journal of Management*, 12(3): 363-377.
- Shrivastava, P. (1987) 'Rigor and Practical Usefulness of Research in Strategic Management', *Strategic Management Journal*, 8: 77-92.
- Sigurdson, J. (ed) (1990) *Measuring the Dynamics of Technological Change*. London: Pinter Publishers.
- Silk, M.A. (ed) (1994) *Taiwan Trade and Investment Law*. Hong Kong: Oxford University Press.
- Silk, M.A., Liu, L.S., and Ross, L. (1994) 'Banking: the Regulatory Aspects', in Silk, M.A. (ed) *Taiwan Trade and Investment Law*. Hong Kong: Oxford University Press.
- Simon, H.A. (1945) *Administrative Behaviour*. New York: Macmillan.

- Simon, H.A. (1983) *Reason in Human Affairs*. Oxford: Blackwell.
- Singh, J.V., Tucker, D.J., and House, R.J. (1986) 'Organizational Legitimacy and the Liability of Newness', *Administrative Science Quarterly*, 31: 171-193.
- Skocpol, T. (1985) 'Bringing the State Back in ', in Evans, P.B., Rueschemeyer, D., and Skocpol, T. (eds) *Bringing the State Back in*. Cambridge: Cambridge University Press.
- Skully, M.T. (ed) (1982) *Financial Institutions and Markets in the Far East*. London: Macmillan.
- Smircich, L., and Stubbart, C. (1985) 'Strategic Management in an Enacted World', *Academy of Management Review*, 10(4): 724-736.
- Smith, C.W. (1983) 'A Case-Study of Structuration: The Pure-bred Beef Business', *Journal for the Theory of Social Behaviour*, 13: 3-18.
- Smith, M. (1992) 'The Agriculture of Policy Community: Maintaining a Closed Relationship', in Marsh, D., and Rhodes, R.A.W. (eds) *Policy Networks in British Government*. Oxford: Oxford University Press.
- Snow, C.S., and Hambrick, D.C. (1980) 'Measuring Organizational Strategies: Some Theoretical and Methodological Problems', *Academy of Management Review*, 5(4): 527-538.
- Soma, J.T. (1976) *The Computer Industry*. MA: Lexington.
- Spender, J-C (1989) *Industrial Recipes*. Oxford: Blackwell.
- Stalk Jr., G. (1988) 'Time - the Next Source of Competitive Advantage', *Harvard Business Review*, July/August: 41-51. repr. in Mercer, D. (ed) (1992) *Managing the External Environment: A Strategic Perspective*. London: Sage.
- Stankiewicz, R. (1990) 'Basic Technologies and the Innovation Process', in Sigurdson, J. (ed) *Measuring the Dynamics of Technological Change*. London: Pinter Publishers.
- Starkey, K., and McKinlay, A. (1993) *Strategy and the Human Resource*. Oxford: Blackwell.
- Stones, R. (1991) 'Strategic Context Analysis: A New Research Strategy for Structuration Theory', *Sociology*, 25(4): 673-695.
- Strauss, A.L. (1987) *Qualitative Analysis for Social Scientists*. Cambridge: Cambridge University Press.

Swedberg, R., Himmelstrand, W., and Brulin G. (1987) 'The Paradigm of Economic Sociology', *Theory and Society*, 16(2): 169-213.

The 1989 Yearbook on the Stockmarket of the Republic of China (1990) Taipei: Institute of Securities Market Development ROC.

Tien, H. (1992) 'Transformation of an Authoritarian Party State: Taiwan's Development Experience', in Cheng, T., and Haggard, S. (eds) *Political Change in Taiwan*. Boulder, Colorado: Lynne Rienner.

Trigg, R. (1985) *Understanding Social Science*. Oxford: Blackwell.

Venkatraman, N., and Grant, J.H. (1986) 'Construct Measurement in Organizational Strategy Research: a Critique and Proposal', *Academy of Management Review*, 11(1): 71-87.

Von Neumann, J., and Morgenstern, O. (1944) *The Theory of Games and Economic Behaviour*. Princeton, NJ: Princeton University Press.

Waarden, F.V. (1992) 'Dimensions and Types of Policy Networks', *European Journal of Political Research*, 21(1-2): 29-52.

Wade, R. (1985) 'East Asian Financial Systems as a Challenge to Economics: Lessons from Taiwan', *California Management Review*, 27: 106-127.

Wade, R. (1990) *Governing the Market*. Princeton, NJ: Princeton University Press.

Wallace, C. (1993) 'Reflections on the Concept of "Strategy"', in Morgan, D., and Stanley, L. (eds) *Debates in Sociology*. Manchester: Manchester University Press.

Wassenberg (1982) 'Neo-corporatism and the Quest for Control: the Cuckoo Game', in Lehmbruch, G., and Schmitter, P.C. (eds) *Patterns of Corporatist Policy-making*. London: Sage.

Weick, K.E. (1969) *The Social Psychology of Organisation*. MA: Addison Wesley.

Weick, K.E. (1989) 'Theory Construction as Disciplined Imagination', *Academy of Management Review*, 14(4): 516-531.

Weick, K.E. (1990) 'Cartographic Myths in Organizations', in Huff, A.S. (ed) *Mapping Strategic Thought*. London: Wiley.

Wernerfelt, B. (1984) 'A Resource-Based View of the Firm', *Strategic Management Journal*, 5: 171-180.

- Whetten, D.A. (1989) 'What Constitutes a Theoretical Contribution?', *Academy of Management Review*, 14(4): 490-495.
- Whipp, R., and Clark, P. (1986) *Innovation and the Auto Industry*. London: Frances Pinter.
- White, G. (ed) (1988) *Development States in East Asia*. New York: St. Martin's.
- White, G., and Wade, R. (1988) 'Development State in East Asia: An Introduction', in White, G. (ed) *Development States in East Asia*. New York: St. Martin's.
- White, H.C. (1981) 'Where do Markets Come From', *American Journal of Sociology*, 87(3): 517-47.
- Whitley, R.D. (1987) 'Taking Firms Seriously as Economic Actors: Towards a Sociology of Firm Behaviour', *Organization Studies*, 8(2): 125-147.
- Whitley, R.D. (1990) 'Eastern Asian Enterprise Structures and the Comparative Analysis of Forms of Business Organization', *Organization Studies*, 11: 47-54.
- Whitley, R.D. (1992a) *Business Systems in East Asia*. London: Sage.
- Whitley, R. D. (ed) (1992b) *European Business Systems: Firms and Markets in their National Context*. London: Sage.
- Whitley, R.D. (1992c) 'Societies, Firms and Markets: the Social Structuring of Business Systems', in Whitley, R.D. (ed) *European Business Systems: Firms and Markets in their National Context*. London: Sage.
- Whitley, R.D. (1992d) 'The Comparative Study of Business Systems in Europe: Issues and Choices', in Whitley, R.D. (ed) *European Business Systems: Firms and Markets in their National Context*. London: Sage.
- Whitley, R.D. (1992e) 'The Social Construction of Organizations and Markets: The Comparative Analysis of Business Recipes', in Reed, M., and Hughes, M. (eds) *Rethinking Organization, New Directions in Organization Theory and Analysis*. London: Sage.
- Whittington, R. (1988) 'Environmental Structure and Theories of Strategic Choice', *Journal of Management Studies*, 25(6): 521-36.
- Whittington, R. (1989) *Corporate Strategies in Recession and Recovery: Social Structure and Strategic Choice*. London: Unwin Hyman.
- Whittington, R. (1992) 'Putting Giddens into Action: Managerial Agency and Social Structure', *Journal of Management Studies*, 29(6): 693-712.

- Whittington, R. (1993) *What is Strategy - and Does it Matter?* London: Routledge.
- Wieviorka, M. (1992) 'Case Studies: History or Sociology?', in Ragin, C.C., and Becker, H.S. (eds) *What is A Case?* Cambridge: Cambridge University Press.
- Wilks, S. (1990) The Embodiment of Industrial Culture in Bureaucracy and Management, In Clegg, S.R., and Redding, S.G. (eds) *Capitalism in Contrasting Cultures*. Berlin: de Gruyter.
- Williamson, O.E. (1981) 'The Modern Corporation: Origins, Evolution, Attributes', *Journal of Economic Literature*, 19(4): 1537-1568. repr. in Mercer, D. (ed) (1992) *Managing the External Environment: A Strategic Perspective*. London: Sage.
- Williamson, O.E. (1985) *The Economic Institutions of Capitalism*. New York: Free Press.
- Williamson, O.E. (1988) 'The Economics and Sociology of Organizing: Promoting a Dialogue ', In G. Farkas and P. Englan (eds) *Industries, Firms and Jobs*, New York: Plenum.
- Williamson, O.E. (1991) 'Strategizing, Economizing and Economic Organization', *Strategic Management Journal*, 12: 75-94.
- Williamson, O.E. and Winter, S.E. (eds) (1991) *The Nature of the Firm*. Oxford: Oxford University Press.
- Williamson, P.J. (1989) *Corporatism in Perspective: An Introduction to Corporatist Theory*. London: Sage.
- Willmott, H. (1990) 'Beyond Paradigmatic Closure in Organizational Enquiry', in Hassard, J., and Pym, D. (eds) *The Theory and Philosophy of Organizations*. London: Routledge.
- Winckler, E.A. (1984) 'Institutionalization and Participation on Taiwan: from Hard to Soft Authoritarianism?', *China Quarterly*, 99: 481-499.
- Winckler, E.A. (1992) 'Taiwan Transition', in Cheng, T., and Haggard, S. (eds) *Political Change in Taiwan*. Boulder, Colorado: Lynne Rienner.
- Winckler, E.A., and Greenhalgh, S. (eds) (1988) *Contending Approaches to the Political Economy of Taiwan*. New York: M.E. Sharpe.
- Winkler, J. (1977) 'The Coming Corporatism', in Skidelsky, R. (ed) *The End of the Keynesian Era*. London: Macmillan.
- Wong, S. (1985) 'The Chinese Family Firm: A Model', *British Journal of Sociology*, 36: 58-72.

- Wrong, D.H. (1961) 'The Oversocialized Conception of Man in Modern Sociology', *American Sociology Review*, 26(2): 183-193.
- Wu, Y. (1985) *Becoming an Industrialized Nation: ROC's Development on Taiwan*. New York: Praeger.
- Yin, R.K. (1984) *Case Study Research: Design and Methods*. London: Sage.
- Yin, R.K. (1993) *Applications of Case Study Research*. London: Sage.
- Yoffie, D.B. (1987) 'Corporate Strategies for Political Action: A Rational Model', in Marcus, A.A., Kaufman, A.M., and Beam, D.R. (eds) *Business Strategy and Public Policy*. Westport, Connecticut: Quorum Books.
- Yoffie, D.B. (1988) 'How an Industry Builds Political Advantage', *Harvard Business Review*, May-June: 82-89.
- Yu, T.-S. (1992) 'A Quick Adjustment of Taiwan to an Enhanced Economic Position in the World', A Paper presented at the 1992 East Asia Petrochemical Industry Conference, May 21-22. Taipei: Chung-Hua Institute for Economic Research.
- Zeigler, H. (1988) *Pluralism, Corporatism and Confucianism*. Philadelphia: Temple University Press.
- Zich, A. (1993) 'Taiwan', *National Geographic*, November: 2-33.
- Zucker, L.G. (ed) (1988) *Institutional Patterns and Organizations: Culture and Environment*. Cambridge, MA: Ballinger.
- Zukin, S., and DiMaggio, P. (eds) (1990) *The Social Organization of the Economy*. Cambridge: Cambridge University Press.

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Addison, C. (1993) 'Slowly but Surely for Taiwan's LCD Effort', *Electronic Business Asia*, March: 81-2.

Arensman, R. (1990) 'PC Makers Seek Footholds in Growing Asian Markets', *Electronic Business Asia*, May: 62-64.

Arensman, R. (1991) 'Taiwan takes Aim at Notebook Computers', *Electronic Business Asia*, July: 48-59.

Asian Finance (1988) 'Multitech Goes Global with Its Computer Clout', 14(2), 15 Feb.: 54-6.

Baum, J. (1993) 'Taiwan: No Way to Treat an Ally', *Far Eastern Economic Review*, 156(14), 8 April: 21.

Baum, J., and Awanohara, S. (1992) 'Taipei on a Tightrope; Role of Dishonor', *Far Eastern Economic Review*, 155(19), 14 May: 45-8.

Brown, C. (1990) 'Taiwan's "New" Materials', *Far Eastern Economic Review*, 149(39), 27 Sep.: 74.

Brown, C (1990) 'Taiwan Draws a Bead on Notebook PCs', *Electronic Business Asia*, December: 78-9.

Brown, C. (1991) 'Stock Questions: Taiwan Computer Firms face Shortage of Critical Parts', *Far Eastern Economic Review*, 151(17), April: 47.

Brown, C. (1991) 'Taiwan Electronics Firms Struggle Toward High End', *Electronic Business Asia*, May: 71-3.

Brown, C. (1991) 'Full Steam Ahead for Taiwan's Mouse Makers', *Electronic Business Asia*, June: 81-2.

Brown, C. (1991) 'It's Intel vs. AMD in Taiwan', *Electronic Business Asia*, Sep.: 77-8.

Chang, T. (1990) *The Competitive Strategies of Firms in Their Internationalization Process - The Case of Taiwanese Firms in The Information Industry*. Unpublished Doctoral Dissertation, The George Washington University.

Chern, J. (1991) 'The Analysis of Major PC Firms in Taiwan', *Information Industry Newsletter* (in Chinese), December (3): 1-21.

- Chou, M. (1991) 'The Analysis of Current Profile and Trend for HDD Industry', *Information Industry Newsletter* (in Chinese) December (2): 1-16.
- Clifford, M. (1992) 'Pirates' Lair: Taiwan's Software Copiers Perfect the Hologram', *Far Eastern Economic Review*, 155(40), 8 Oct.: 79-80.
- Clifford, M. (1993) 'Shroff: Is the Acer Turn-around for Real', *Far Eastern Economic Review*, 156(9), 4 March: 58.
- Clifford, M. (1993) 'Power Switch', *Far Eastern Economic Review*, 156(50), 16 Dec.: 44-5.
- Clifford, M. (1993) 'Price of Independence', *Far Eastern Economic Review*, 156(51), 23 Dec.: 52-3.
- Delaney, S.F. (1986) 'Growing Computer Industries in Taiwan', *OEP Office Equipment & Products*, 15(97), Nov.: 46-9.
- Dubashi, J. (1991) 'The Dragon's Curse: Why Taiwan's \$1 billion Acer Group in Betting the Store on PCs', *Financial World*, 160(15), July: 46-7.
- The Economist* (1992) 'Inferiority Complex: Taiwan's Acer', 308(7568), 1 Feb.: 78-9.
- Engardio, P. (1992) 'Quick, Name Five Taiwanese PC Makers', *Business Week*, 18 May: 128-9.
- Engardio, P. (1993) 'Acer: Up from Clones - and Then Some', *Business Week*, 28 June: 54.
- Engardio, P. (1993) 'Taiwan: The arms Dealer of the Computer Wars', *Business Week*, 28 June: 51-4.
- Flannery, R. (1993) 'United Microelectronics: Chip Maker Plays a New Tune', *Asian Business*, 29(4), April: 16.
- Foster, M. (1989) 'US Firms Battle the Pirates of Taiwan', *Electronic Business*, 15(7), 3 April: 83-4.
- Goldstein, C. (1992) 'Taiwan's PC Gamble: Computer Firms Cosy Up to China', *Far Eastern Economic Review*, 155(38), 24 Sep.: 87-8.
- Goldstein, C., and Baum, J. (1990) 'Taiwan: Acer in the Hold; the Chips are Down', *Far Eastern Economic Review*, 150(5), 13 Dec.: 62-3.
- Gwynne, P. (1993) 'Taiwan to Develop Local Software Industry', *Research-Technology Management*, 36(1), Jan/Feb: 3-44.

Gwynne, P. (1993) 'Taiwan Info Industry keeps on Going', *Research-Technology Management*, 36(5), Sep/Oct: 3-4.

Hsiung, H. (1991) 'A Tough Road Ahead for Taiwan's PC Makers', *Electronic Business Asia*, April: 79-80.

III (1983-93) *Information Industry Yearbook* (in Chinese). Taipei.

III (1991a) *A Survey on PC Industry in the Republic of China* (in Chinese). Taipei: Information and Computer Publishing.

III (1991b) *Taiwan Personal Computer Industry Report: Hardware/Software Strategies and Trends - 1991 Edition*. Taipei.

Johnstone, B. (1988) 'Taiwan's Computer Makers Develop Products of Their Own - Send Out the Clones', *Far Eastern Economic Review*, 139(2), 14 Jan.: 46-7.

Johnstone, B. (1989) 'Asia Technology - Into the Next Generation', *Far Eastern Economic Review*, 145(35), 31 Aug.: 48-54.

Johnstone, B. (1990) 'Research and Innovation: Meet Mighty Mouse', *Far Eastern Economic Review*, 149(32), 9 Aug.: 62.

Johnstone, B. (1992) 'Defining Success', *Far Eastern Economic Review*, 155(23), 11 June: 62.

Johnstone, B. (1992) 'Screen Partners: Taiwanese Cooperate with Japanese LCD Firms', *Far Eastern Economic Review*, 155(26), 2 July: 40-1.

Johnstone, B. (1993) 'Research & Innovation: An Ace up Asia's Sleeve', *Far Eastern Economic Review*, 156(16), 22 April: 62.

Johnstone, B. (1993) 'Research & innovation: Breaking the Rules', *Far Eastern Economic Review*, 156(25), 24 June: 52.

Johnstone, C., and Clifford, M., and Brown, C. (1991) 'Computer Crash: Asian PC makers Struggle as sales Slump', *Far Eastern Economic Review*, 154(42), Oct.: 105-7.

Knight, R. (1993) 'A Gateway to China', *Software Magazine*, 13(10), July: 26-27.

Kraar, L. (1994) 'Your Next PC Could be Made in Taiwan', *Fortune*, 16, 8 Aug.: 50-55.

Lin, C., and Wang, H. (1991) 'A Study on ROC Notebook PC Strategic Alliance Case', *Technology Management Review* (in Chinese), 1(1): 65-82.

- Liu, P. (1988) 'Emperor of Taiwan's Computer Industry', *Electronic Business*, 14(20), 15 Oct.: 96-98.
- Liu, P. (1988) 'US Computer Firms Go Shopping in Taiwan', *Electronic Business*, 14(23), 10 Dec.: 154-6.
- Liu, P. (1989) 'Big Blue Benefits from Funding R&D in Taiwan', *Electronic Business*, 15(10), 15 May: 105-6.
- McCormick, J. (1993) 'Euro Fever', *Electronic Business Asia*, March: 364-42.
- Madu, C.N., Kyei, C., and Madu, A.N. (1991) 'Setting Priorities for the IT Industry in Taiwan - A Delphi Study', *Long Range Planning*, 24(5): 105-118.
- McCreadie, J., and Liu, P. (1990) 'Wyse Sale May Signal a Boom in US-Taiwan Deals', *Electronic Business*, 16(4): 79-80.
- Moore, J. (1988) 'Apple of Taiwan's Eye', *Far Eastern Economic Review*, 141(28), 14 July: 62.
- Moore, J. (1989) 'Taiwan: Taipei Wyses Up', *Far Eastern Economic Review*, 146(52), 28 Dec.: 46-7.
- Ristelhueber, R. (1993) 'Intel: The Company People Love to Hate', *Electronic Business Buyer*, September: 58-67.
- Roy, B. (1989) 'Acer's Stan Shih: Against All Odds', *Asian Finance*, 15(11), 15 Nov.: 17-23.
- Schive, C., and Hsueh, K. (1987) 'The Experiences and Prospects of High-tech Industrial Development in Taiwan, R.O.C. -The Case of the Information Industry', Conference Series No. 6, Chung-hua Institution for Economic Research. Taipei.
- Shao, M. (1987) 'Stan Shih Wants "Made in Taiwan" to Mean First-rate', *Business Week*, 3002, 8 June: 190, 112..
- Shapiro, D. (1992) 'Taiwan: Caught Up in Copyright', *Asian Business*, 28(9), Sep.: 17-8.
- Shih, S. (1989) *The Challenge for Creating Business*. (in Chinese) Taipei: University of Society.
- Soong, R., and Kovar, J. (1993) 'Intel Faces Monopoly Investigation in Taiwan', *CompuTrade International*, 1 Sep.: 36-40.
- Taiwan Institute of Economic Research (1991) *Electronic Industry Yearbook of the Republic of China* (in Chinese). Taipei.

- Tanzer, A. (1989) 'Brain Drain in Reverse', *Forbes*, 143(8), 17 April: 114-5.
- TCA (1991) *Computer Business '91 with Taiwan*. Taipei.
- TCA (1993) *Taiwan Computer Suppliers*. Taipei.
- Tuck, D. (1993) 'Taiwan's Acer Group: Searching for New Directions', *Global Computer Express*, May: 52-8.
- Uimonen, T. (1993) 'Who Makes What, and Where: a Survey of the Production Shift from Taiwan', *Global Computer Express*, May: 43-50.
- Wang, P. (1988) *The Charming for High Growth*. (in Chinese) Taipei: Chinese Times.
- Welt, R.G.S. (1987) 'The Taiwan Computer Industry - A market at the Peak of Evolution', *OEP Office Equipment & Products*, 16(109): 36-7.
- Whiting, R. (1991) 'An Ambitious Taiwan Beckons US Electronics Patterns', *Electronic Business*, 17(23), 9 Dec.: 32-8.
- Whiting, R. (1993) 'Getting Acer Back on Track', *Electronic Business*, 19(2), Feb.: 76-8.
- Wu, E. (1992) 'First Byte Joint Ventures', *Free China Review*, 42(12), December: 30-1.
- Xiaoge, Xiong (1991) 'A Tough Road Ahead for Taiwan's PC makers', *Electronic Business*, 17(2), Jan.: 73-4.
- Yih, Y. (1991) 'The Current Profile and Developmental Strategies for Taiwanese HDD industry', *Electro-Optic Industry Newsletter* (ITIS: ITRIOE-069-C305) (in Chinese) June: 1-20.